PP 1912 Ha.

Incorporating "The Optical Magic Lantern Journal & Photographic Enlarger"
"The Lantern World" and "Cinematograph Chronicle."

No. 11.—Vol. 1. SEPTEMBER, 1905. 3d. Monthly. By Post, 4d.

NOVEL FILMS.

The Adventures of a £100 Note.
While the Household Sleeps.
Pierrot and the Devil's Dice.
How he learned Japanese Wrestling.
Ascent of Barton's Airship.
The Channel Swimmers.
Why the Typist was Sacked.
The Dancer's Dream.
Goaded to Anarchy.

PAUL

For Particulars of these and many other original subjects,

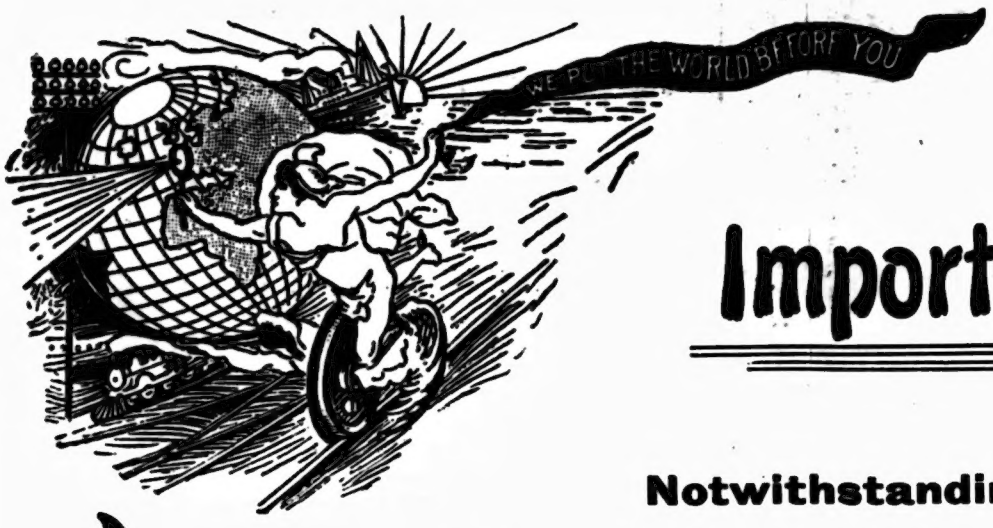
TO SUIT EVERY AUDIENCE,

SEND FOR LISTS TO

Robt. W. Paul, Animatograph Depot. **68, High Holborn, London, W.C.**

TELEGRAMS: CALIBRATE. TELEPHONE 4614 HOLBORN.

And at Newton Avenue Works, New Southgate, N.



Important.

Notwithstanding the reports spread with malicious intent to injure our Extensive Business in

FILMS AND MACHINES,

we herewith inform the Trade that a vast collection of

UNIQUE & ORIGINAL FILM SUBJECTS

can be procured from us at all times.

Our CAMERAS, PROJECTORS, ARC LAMPS and all LIFE MOTION PICTURE ACCESSORIES are of the most up-to-date type and of superior workmanship.

Apply for our latest Catalogue (320 Pages) sent Gratis.

CHARLES URBAN TRADING CO., LTD.,

48, RUPERT ST., LONDON, W.

Telephone—3118 CENTRAL. Telegrams—"BIOSCOPE, LONDON"

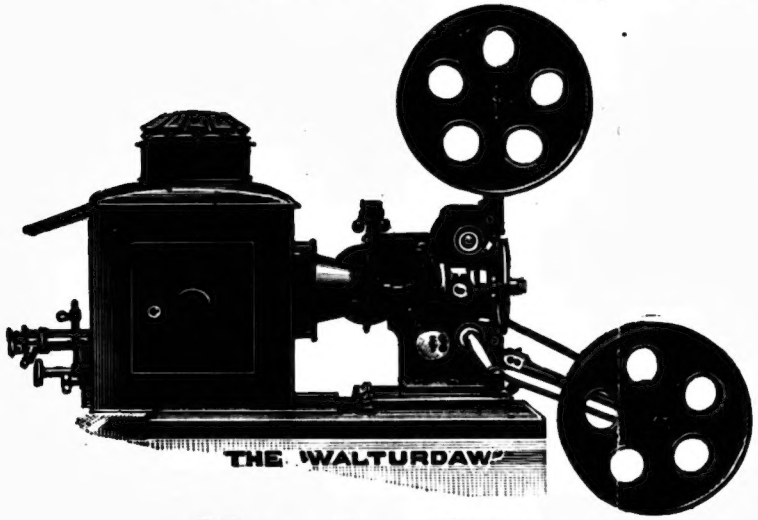
Twelfth Year of Continued Success.

The "WALTURDAW" Co., Ltd.,

— MAKERS OF THE —

Walturdaw Bioscope

AUTOMATIC SHUTTER, PERFECTLY FIREPROOF.



No. 1, £25.

The Walturdaw Co., Ltd.,

ARE

MANUFACTURERS OF AND DEALERS IN EVERYTHING APPERTAINING TO ANIMATED PHOTOGRAPHY.

Send for Lists and Catalogues of the

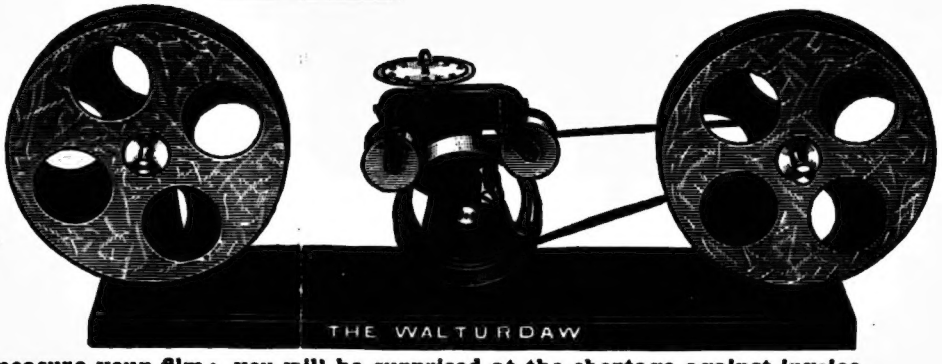
WALTURDAW SPECIALITIES,

Post Free.

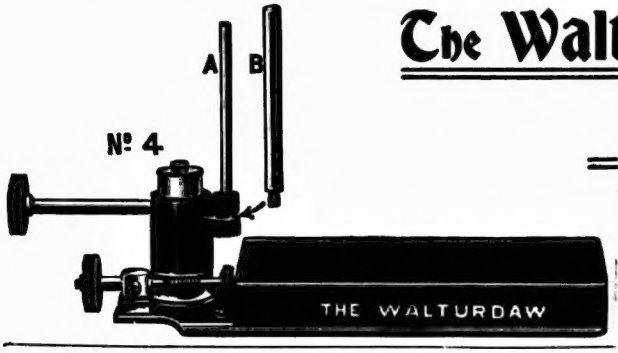
Remember our LENDING LIBRARY of Films—Over 8,000 Film Subjects—All the Latest Pictures.

The Walturdaw Film Measurer

Price £3 3s.



Purchase this—and measure your film; you will be surprised at the shortage against invoice.



The Walturdaw Mechanical Lime Light Tray

With all Arc Lamp Movements and interchangeable Pillars for any make of Jet.

Price 16/6.

THE "WALTURDAW" COMPANY, Ltd.,

Telegrams, "Albertype, London."
Telephone, 4707 Holborn.

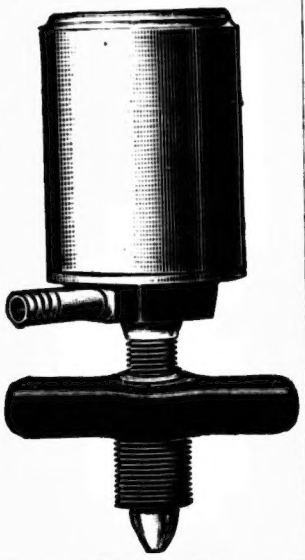
3, Dean Street, High Holborn, London, W.C.

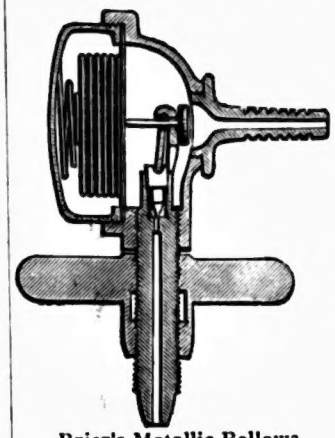
Rubber Bellows Regulator

With or Without
PRESSURE GAUGE.

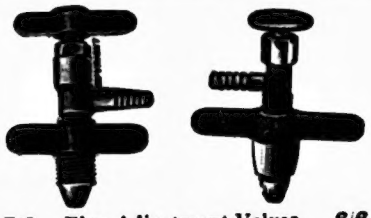
Prices:

Regulator only	20/-
Do. with 4 in. Through Passage Gauge ...	57/6
Do. with 2½ in. Through Passage Gauge ...	46/-



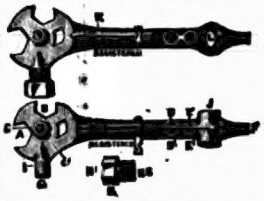


Brier's Metallic Bellows Regulator, 20/-



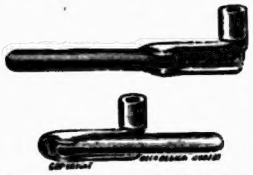
7/6 Fine Adjustment Valves, 6/6
Double 8/- Treble 10/6

KEYS (all of stamped steel)—
Tee, Blacked 1/6 Lever 1/9
Plated 1/9 Gland 1/6



B.P. Combination
Blacked 6/6 Plated 7/6

Folding Cylinder Stand for 4 in. Cyl. 4/-; 5½ in. 5/-; 7 in. 6/6



Folding (Murray's Patent), Blacked 1/9 Plated 2/-

Dbl Union (any ptn.) for decanting 6/-, without Gauge Connection, 5/-

Tee Piece for Rubber Tubing, 9d.

Nipple and Union (any ptn) Light 2/- Heavy 2/3

Special Terms to the Trade.

Tee Connection for Gauge & Regulator, 6/6.

SCOTCH & IRISH OXYGEN CO., LTD., Rosehill Works, Polmadie. GLASGOW.

W. TYLAR,
41, High Street, Aston,
BIRMINGHAM.

Tylar's Dreadnought Generator.

42/=
COMPLETE

Its great success has been due to its portability, its certainty and its simplicity. It is the smallest generator for supplying a large amount of gas yet made. Its height is 13½ in. and largest diameter 7½ in. and yet it will produce gas to keep a powerful double jet going for 2 hours. It is quite automatic in its action, and don't play pranks with the operator. It can be turned on and off at will, and left charged up ready for use. Its price is ***£2 2s.*** *which includes all necessary for the lantern. Of all Dealers.*

Write for Dreadnought pamphlet and read the numerous unsolicited testimonials received, they will convince the most sceptical.

Absolute Safety.

Trade Announcements.

35 Copies of "Stereoscopic Phenomena of Light and Sight" to be disposed of at half published price, on account of covers being slightly soiled. This Book has received the highest recommendation from the Photographic Press and public, and contains a wealth of illustrations and information on Stereoscopic Photography. Usual price 3/6, price of slightly soiled copies 1/9, post free. Only the above number can be sold at this price.– From the MANAGER, the Stereoscopic Supply Stores, 34*a*, Castle Street, Salisbury.

CINEMATOGRAPH FILMS on Hire, Sale, or Exchange. Hire Day, Week, or longer period, at reasonable rates.— THE MICROGRAPH CO., LTD., 7, Great Queen Street, London, W.C.

EDMUND H. WILKIE,

Specialist in Optical Projection,
(*Late Royal Polytechnic*),

114, MAYGROVE ROAD,
WEST HAMPSTEAD, LONDON, N.W.

R. R. BEARD'S SPECIALITIES.

The Only Automatic Regulator.

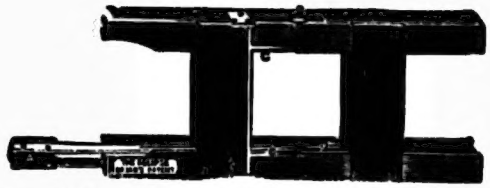
BEARD'S PATENT No° 17072

Beware of imitations. Genuine Regulators stamped thus.

Price **21/-** each. With Branch for Gauge, **26/-** each. Best Quality Pressure Gauges, 3 in., **30/-** each; 2½ in. **21/-** each.

Full Illustrated Lists of New Pattern Russian Iron Lanterns, Arc Lamps, Resistances, Limelight Jets, etc., etc., post free.

"Eclipse" Single Lantern Carrier.



For Slides 3¼ × 3¼, **10/6.** Self-centring, for slides 3¼ × 4¼ to 3¼ × 3¼, **12/6.** Slides are inserted and withdrawn from same end of carrier. . . . Produces dissolving effect. . . .

No blank screen. No total darkness. Most simple to work.

The Imperial or Telescopic Screen Elevator.

Most portable, simple, and easiest to erect, so constructed that an operator can fix screen and stand, any size up to 30 feet square, without any help or assistance.

Prices and Full Particulars on Application.

Telephone No. 1961 Hop.

R. R. BEARD, Lantern and Cinematograph Expert and Manufacturer,

10, TRAFALGAR ROAD, OLD KENT ROAD, LONDON, S.E.

S.P.C. FILMS.

No. 164.

"When Father Laid the Carpet on the Stairs."

A very humorous film, illustrating the well-known song. Length 200 ft. Price **£5.**

Code word—"Father."

No. 165.

"A Fireman's Story."

Scene 1—A Rival.
2—Treachery.
3—The Turn Out.
4—At the Fire.
5—Accused.
6—In Hospital.
7—The Hospital. Discharged.
8—The Wedding.
9—Eighteen months after.

A splendid story well told. Length 490 ft.

£12 5s.

Code word—"Fireman."

No. 166.

"The Shoplifter."

A very exciting film. Length 200 ft. **£5.**

Code word—"Shoplifter."

No. 167.

"A Ride on the Kinver Light Railway."

Beautiful Scenery. Excellent Quality.

Length 245 ft. **£6 2 6.**

Code word—"Kinver."

No. 168.

"A Man although a Thief."

Very Pathetic. Length 184 ft. **£4 12s.**

Code word—"Thief."

No. 169.

"The Demon Motorist."

Terrible catastrophies. Very thrilling.

Length 115 ft. Price **£2 17 6.**

Code word—"Motorist."

From all Dealers or direct from

SHEFFIELD PHOTO CO., Cinematographers, 95, Norfolk Street, Sheffield.

TELEGRAMS: "PHOTO," SHEFFIELD. TELEPHONE 4 Y.

GENUINE

EDISON

— The Leading Moving Picture Machine. —

KINETOSCOPES

ORIGINAL FILMS

Price £15 15s. 0d. THE BEST IS CHEAPEST.

HOW JONES LOST HIS ROLL.—Length 575 feet.

THE BURGLAR'S SLIDE FOR LIFE.—Length 265 feet.

THE SEVEN AGES.
Beautiful tint effects. Length 415 feet.

THE KLEPTOMANIAC.
A successful film in ten scenes and tableau. Length 670 feet.

THE EX-CONVICT.
A new film in a series of well acted scenes, showing the struggles of an ex-convict to redeem his past and lead an honest life. A very effective pathetic story. Length 660 feet.

PARSIFAL.
Films are now ready of Wagner's masterpiece, dramatically and photographically perfect, specially posed and rehearsed with the identical talent, scenery and costumes used in the original dramatic production. Complete illustrated lecture and musical score furnished with each film. The greatest religious production in moving pictures since the Passion Play.
Length 1975 feet.

NONE GENUINE WITHOUT TRADE *Thomas A Edison* MARK LOOK FOR SIGNATURE.

A large variety of subjects to meet all requirements and new sensational films constantly arriving.

For Catalogues and Full Information address:— **Dept. O.,**

Edison Manufacturing Company, Ltd.,

25, CLERKENWELL ROAD,
LONDON, E.C.

European Headquarters for Edison Laboratory Products.

Is Trade Organisation Needed among Operators?

PROPOSED TRADE GUILD.

FROM our experience, the lantern operator is one of the most lonely and hard worked beings, having to plod and toil for a salary barely sufficient to keep body and soul together. We have rubbed shoulders with many who have inventive genius, a thorough knowledge of the capabilities of their machines, and who are blessed with the happy knack of doing the right thing at the critical moment, thus averting disaster, and in many cases catastrophe. They have been content to tediously follow the same routine day by day or night by night, entering their sheet iron stuffy coffin, and becoming intelligent and perspiring automatons, giving delight to thousands who do not even know of their existence. Diogenes in his tub was a king compared with the lantern man, for he had his thoughts for company, whereas the operator has little time to think; and, again, Diogenes took to the tub to please himself, but the operator takes to his box to please others.

THEY know no one in the profession outside their employer and fellow-employés, and consequently run on year by year in the same groove which they carve for themselves. Many such have spoken to us in the interval of their shows. Some have expressed a desire to obtain more knowledge of the subject. They are aware that, by altering a screw or changing a pin, something happens; or that by turning the focus screw better or worse results are obtained on the screen; but of why the difference takes place they are perfectly oblivious. They desire knowledge; but where to turn for the help and instruction that would make them perfect in their profession they know not. None of the technical schools or polytechnics take up the subject, although nearly every other technical profession is dealt with, even to the making of a chauffeur. We have been asked, time after time, "where can I learn to become a successful operator?" We have only been able to give an ambiguous reply, suggesting the joining of the staff of a well-known firm, and picking up the required knowledge by keeping the eyes wide open.

IT is not only the want of a centre of technical knowledge that causes us to take up the question of a trade organisation or guild, but the fact that, during the past twelve months, we have received much correspondence on the question of salaries, the number and lateness of the hours worked, the duties, liabilities, risks, and many other varying questions affecting the operator and employer. The following are extracts from some of the letters:—

"I have read many of your articles and found them useful; but think there is yet something wanting either in ourselves as a body or in you as the trade journal. Could you not give more information which would be helpful to the operator, that is, let him know how to improve his lot? The average man at the lantern is employed two hours a night at a small

pittance. He may have been a scene shifter or a broken down theatre manager, brought into touch with another operator, and suddenly blossoming out as a full blown operator himself. He is engaged chiefly because he only asked for a small wage, and promised big results from his 'vast experience.' Cannot something be done to help such a state of things?"

"Is it not time there was some organisation among the operators of the living pictures? I have held a position for two years with a well-known firm who supply this turn to several northern halls. Previously I was in the workshop, and know every mechanical wrinkle connected with the work. I was recently given a week's notice, and afterwards found my place filled by a man who was a clerk in the office during the day time."

"What constitutes a lantern operator? Anyone with sufficient muscular power to grind coffee seems duly qualified, judging by the men ——— are employing? Is it not time our interests were safeguarded against this class of intruder?"

NUMEROUS appeals of a like nature make us feel that the time is now ripe for an Association which would rectify many of the abuses of which our correspondents complain. We are, however, reluctant to assume command, although our columns would always be open to support such an organisation, and our pages would be an easy means of communication with those concerned. Before coming to a decision, however, we have decided to send a letter to every operator in the country, in which the following questions are asked:—

Are you in favour of a Lantern Operators' Guild?

Will you become a member if, and when such a Society is formed, if the annual subscription does not exceed 5/- per annum?

Will you support such a Society to the utmost of your power, so long as your personal interests are in no way prejudiced?

THE work and objects of the Society would, of course, be governed and managed by a Committee, but roughly the objects would be:—

To see that the interests of the operator are secured with regard to salary, hours, and health.

To determine the status of operators by a qualifying examination or otherwise, and so raise the standard of the profession, and at the same time reduce the possibility of a first-class man, with long experience, finding himself ousted from his position by the man who has been untrained.

To enable operators and those in the various branches of the trade the means of exchanging ideas and establishing a centre, where trade disputes, etc., could be adjusted, important trade matters could be discussed, and which would act as a bureau between employé and employer.

To control a register of addresses of mechanics, electricians, operators, and specialists in every department of the trade, such register to be open to the inspection of subscribers.

IT must not be inferred from any of our remarks in this connection that we are n any way taking the part of the operator against the employer. Our desire is to secure the best interests of both. The master, who employs a member of the Society, will be saved trouble and expense, and the probability of having an inexperienced servant. The Society, by cultivating advancement in the science, and fostering an interest in every new invention; by bringing operators into touch with one another for the exchange of ideas and by encouraging and assisting those who desire to improve their position, would indirectly benefit the employer to a large extent by giving him men with greater intelligence and with an all-round know-

BRITISH MUSEUM

ledge which could not but raise the standard of living picture shows. We have no more to say at present under this heading; and unless we find we have the whole-hearted co-operation of a fair majority of our readers, we shall be forced to the conclusion that apathy in the trade is the cause of the present position of dissatisfaction of many employees.

OUR Correspondence Column is open for letters from anyone interested in the idea, as the more widely the subject is discussed the more likely are we to arrive at unanimity.

Answers to Queries.

28 **Weakest part of Projector.**—The weakest point in the present projectors for animated pictures, is to my way of thinking, the mechanism employed for changing the pictures during the passage of the shutter. A slight variation in perforations or shrinking of the film, causes trouble at this point of the mechanism. What is wanted, is some means of passing the film one picture forward, without injuiry thereto and with absolute accuracy of registration.—E.R S.

29 **Rewinding whilst Projecting.**—The idea of winding one film whilst another is being run through the machine, is an excellent idea; and if E. S. H.'s method is satisfactory, it would meet with ready adoption by most showmen. It should be suggested to the inventor that he provisionally protects his invention at the patent office; and then approaches the various manufacturers with a view to giving a practical demonstration of the apparatus. This would soon prove to the inventor whether or not his idea was of value, and would lead to a discovery of any weaknesses the contrivance may have. There are many conditions to be fulfilled, and there are also the regulations to be thought of in designing such an apparatus.—E. FOSTER.

Questions.

30 **Old Films.**—I have a quantity of films which have been patched, pieced, and mended until practically useless for exhibition. Is there a market for such and where?—J. A. S.

31 **Lecturing.**—I have prepared a couple of lectures which I illustrate with slides I have myself made, and with various films which bear on the subjects. I have shown privately, and have been congratulated on a highly interesting entertainment. I want to obtain engagements. How shall I go about it? I have my own lantern and accessories.—BUDDIST.

HOW TO MAKE NEAT AND EFFECTIVE TITLE SLIDES.

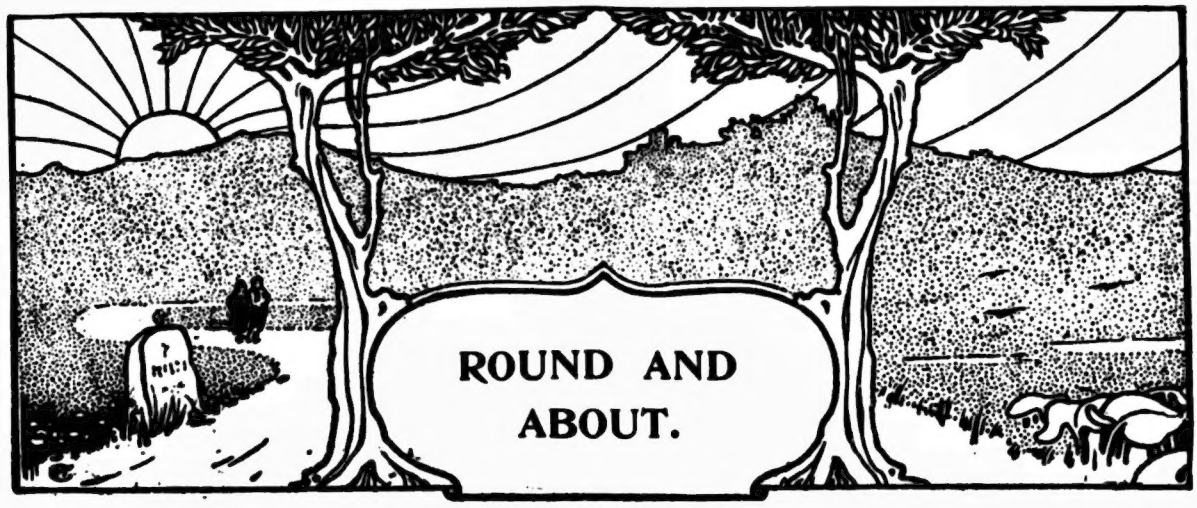
MANY exhibitors fail to appreciate the importance of a good announcement upon the screen, with the result that we find all sorts of makeshifts appearing. The title of the subject, badly written with a pen or pencil point upon a sooted glass, and showing up in all its ugliness the poor handwriting of the operator or his assistant. In a future issue of this journal we intend publishing an illustrated article on the subject; we will content ourselves for the present by giving details as to how effective titles may be made, though the maker may be possessed of little artistic ability.

Obtain from the rubber stamp makers a box of rubber types, such as are supplied in boxes for the modest sum of 2/6. The little types are metal with rubber faces, and arranged in a rack fixed to the box, tweezers and a type holder is also included, so that any wording may be set up in a few seconds. The style of types chosen should be *block*.

Having sooted the lantern glass in the usual manner, place it soot side uppermost upon a level surface. Without applying ink to the type press it upon the soot, when it will take up the small particles from the glass, leaving clear spaces where the type rested. Before applying the types a second time they should be cleaned with a brush, dusting off the soot. This operation is simplicity itself, and the wonder is that it has not been practiced before.

The rubber type makers also supply ornamental borders, without wording in the centre. These rubber faces may be obtained for a few pence, and if impressed upon a sooted surface in the manner indicated, produce clear glass where they touch. The title may afterwards be stamped within the ornamental border, and altogether a very effective title slide is produced.

The method above suggested is especially useful where duplicate titles are required.



The New Century Animated Picture Coy.

Have been very successful at the Olympia, at Scarborough, where crowded houses testified to the interest in their varied collection of up-to-date films.

Lanternist's Change of Address.

Mr. W. T. Redman wishes us to announce that he has removed from 23, Sharow Street, Bradford, to 132, Maperton Road, Bradford; where he will continue his business as heretofore. Why not advertise the fact, Mr. Redman?

Mr. Mackenzie,

Mr. de Windt's colleague, recently went to Scarborough, to get photos of divers at work on the pier wreckage. He wore a diving costume and the camera was placed in a watertight box.

Beard's Patent Regulator.

We note that Mr. Beard is making reductions in the prices of several of his specialities this season, notably the automatic regulator—fine adjustment valve—and the regulator and gauge combined.

St. Veronia

The Indian Journal of Photography, contained much useful matter in the July number, and we are glad to know that the editor, Mr. Geo. Ewing, F.R.P.S., is promising changes and improvements in the journal, now that he is convalescent.

The United Stereoscopic Society.

The Annual Competition of members' work is to be held in November, when silver and bronze medals will be awarded. The demonstration for September is: "Three-Colour Photography and its value towards Stereoscopic Work," by Victor Selbi, Esq., of Brussels.

Messrs. Morley & Cooper

Of 27, Upper Street, Islington, have made extensive preparations to meet the demand during the coming season for lanterns, slides, and repairs to lantern apparatus. They intend making cinematograph and select entertainments a speciality.

The Pathe Cinematograph Co., Ltd.

Inform us that they have just completed extensive additions to their factories and plant, and have vastly increased facilities for the production of films; in view of which they are offering a liberal discount off all prices hitherto charged for their productions.

The Sheffield Photo Co.

Are going ahead and have been very busy the last three months. Repeat orders keep arriving for the "Eccentric Burglary" film, and there is a demand for their other productions. They are shortly removing to larger and more convenient premises. We have recently received this firm's three lists, namely one lantern, slides and apparatus list, the photographic catalogue and the supplementary lists of films. All three brim with good things and it would pay readers to send for copies.

Mr. Harry de Windt

Had considerable trouble in securing films to illustrate the Turco-Bulgarian conflicts in his recent tour through Macedonia and Bulgaria. He could not get the natives to look sufficiently animated, for they stood stolidly gazing at the instrument. They were only brought to a sense of what was required by flinging handfuls of piastres among them, when some admirable skirmishes took place.

Mr. Urban Scores Again.

The same night that Peace between Japan and Russia was concluded, Mr. Urban produced a film at the Alhambra which was received with round after round of applause. "Peace," an impressive figure, holds a reception of all nations, and finally Russia and Japan advance and kneel in front of a well-balanced group, and receive the olive branch among the waving of flags and the plaudits of the other nations. The splendid French reception films are interspersed with two good comics—"The New Errand Boy" and "The Crinoline"—both wonderful mirth provokers.

Living Pictures of a Wedding.

The Marquis and Marchioness of Bute entertained a party at Mountstuart the other week for grouse shooting. They provided for their friends in the evening a cinematograph exhibition, the pictures given being a representation of their own wedding and the attendant festivities at Castle Bellingham. It was odd to see the whole proceedings repeated and the flags fluttering, the children flinging flowers, the pipers strutting down the road, and the bonny bride herself in all her bridal bravery. Then there was the embarkment, the boats moving out from the shore, and the farewell to Erin, as the newly-made Marchioness went off at her husband's side.

Demonstration Hall "Brewster House"

Mr. Hughes has built a Demonstration Hall to enable intending purchasers to see results produced under the same conditions as when working publicly. Any class of Exhibition can be given, either living pictures, dioramic projections, or ordinary lantern slide shows; by limelight, electric light, or oil light. The great advantage of seeing a large or life size picture is, that it shows up every detail and is the only means of accurately judging of the capabilities of any projecting apparatus, or the quality of the picture projected. This acquisition to Mr. Hughes' establishment should prove of great service to lecturers generally, and bring many new customers to Brewster House.

In the Evening Glow.

When a big function takes place in the Jardin de Paris, the management even send their artists to take snapshots for the cinematograph, and those who attend the function in the afternoon have the pleasure of seeing themselves at night in effigy at the Jardin de Paris (writes Frances Keyzer in the *King*). This is very entertaining; yet it sometimes leads to complications. Thus, on the night of the Grand Steeplechase at Auteuil, some smart society people were watching the animated pictures, when suddenly one of the ladies called out: "Tiens, voilà Henri!" Henri was her husband, supposed to be in Brussels, and the indiscreet photographer had betrayed him. It is a pity that the subsequent meeting between Henri and Madame Henri could not have been added as a final tableau.

The Cinematograph Again Blamed!

The following paragraph is worthy the penny-a-liner:-"An alarming incident occurred during the busiest hour at Messrs. Lewis's department store in Manchester. In a basement is a concert room, where entertainments are given at intervals, while a cinematograph exhibition was in progress an electric wire fused, and the stage was strongly illuminated. A woman hysterically shouted "Fire," and instantly the crowded audience rose from their seats and fled panic-stricken to the doorway. Hundreds rushed into the street, and it was only with great difficulty that those remaining were persuaded to be calm. Several women fainted, and a few people were knocked down in the rush."

Thought Pictures.

The latest in the photographic world is "thought photography" and photos by human radiations. According to *Light*, some extraordinary experiments have been carried out by Commandant Darget, who has sent to the Société Universelle d'Etudes Psychiques, Paris, photographs forming two distinct series, according to the manner of their production. In the one case the photographs are produced by the operator merely placing his hand over the plate, his fingers alone touching it, for ten or fifteen minutes, at the same time fixing his thoughts upon a certain object. On developing the plate, the image of the object thought

of, or even of a scene called up in the mind of the operator, is seen to have been fixed on the sensitive plate. The other series of photographs was obtained by applying the plate to the forehead; in this way similar thought images were obtained. If this could be adapted to films, what a splendid series of hair-breath adventures our dreams would produce.

Mr. A. D. Thomas

The General Manager of the Royal Canadian Animated Photo Co., was honoured by a command to give a complete reproduction of their Majesty's visit to Manchester, at Knowsley Hall in the evening of the day it occurred. Over a mile of film was taken, developed and printed, and conveyed to Knowsley, and was shown before their Majesties and Lord Derby's distinguished guests, the exhibition being given in the open air. His Majesty expressed himself as delighted with the pictures, and especially at the rapidity in which they had been produced, and by his desire a series of pictures depicting the royal garden party and the presentation of colours to the 4th and 5th Battalions of the King's Own Lancaster Regiment by His Majesty were taken, and are now being shewn, in addition to the royal visit and the hundreds of other pictures, twice daily, at St. James's Hall.

Animated Photos in the Open Air at Bristol.

On August 18th at the Clifton Zoological Gardens, in connection with the Adult School Sports, Husbands & Sons of Bristol, were engaged to give an Exhibition of living pictures with their electric bioscope, to an audience of about 7,000 persons. This is the first time such a thing has been attempted on such a large scale, in the open air in Bristol, and was more or less of the nature of an experiment. Speeial cables were laid to carry the current to the lantern, and a huge screen was erected in front of the band stand, on which the pictures were seen with splendid clearness, so clear in fact, as to be seen by the spectators at a distance of 300 feet. Every picture was announced with a title slide, and the continued applause from such a vast body of people assembled, was abundant proof of the popularity of the entertainment. The pictures appeared to be absolutely free from flicker. The success of the entertainment was far beyond the expectation of the promoters, and Messrs. Husbands & Sons are to be congratulated on heir success.

Film Copying or "Brain Stealing."

As we go to press important and interesting correspondence on this subject reaches us. We regret it is too late for this number, but in the October issue we intend entering fully into this subject, which is of so vital an importance to the trade. We hear that interesting developments are in progress, which may end in litigation and that several of our leading firms intend to take the matter up in deadly earnest.

NOTICES.

Editor—Theodore Brown. Readers are requested to note that on and after May 15th, the Editorial Office will be at Westcot, Drummond Rd., Boscombe, Bournemouth.

Publishers.—Heron & Co., 9 & 11, Tottenham Street, W. Telegrams, "Heronicus London." Telephone, 4777 Gerrard.

Wholesale Agents.—F. Brett, 5, Pilgrim Street, E.C. John Heywood, Deansgate, Manchester. W. Lawrence, 5, 6 & 7, Sackville Street, Dublin.

Subscription.—Single Copies, 3d. Post Free, 4d. Twelve Months, post free, 4/-

Advertisement Rates.—Per insertion, discount for series.

Whole Page	½ Page	¼ Page	1/8 Page	1/16 Page
£4 0 0	£2 2 0	£1 2 6	£0 12 0	£0 6 0

Facing Back or Front Matter

£3 18 6	£2 0 0	£1 1 0	£0 11 0	£0 6 0

Ordinary Position

Terms: Monthly Settlements, or 5 per cent. for prepayments.

Sale and Exchange and Private Advertisements.—Twelve words, 6d.; every additional two words, 1d.

Professional and Trade Announcements.—Not less than 24 words inserted—fee 1/-; every additional two words, 1d. Thirteen insertions charged as twelve.

Situations Wanted.—Nominal fee of 6d., for not more than 24 words.

M.S.S. -M.S. must be written or typed on one side only, with a margin. Typewriting is preferable to handwritten matter, but the latter will do, providing the handwriting is distinct.

Correspondence Column.—Letters of General Interest to our readers are invited, and will be inserted uncer this head.

Payment for Literary Work.—We do not pay for copy used according to space occupied, but according to value. Payments are made by cheque on the 15th of the month in which the matter appears.

Illustrations.—We cannot undertake to re-draw or work up rough sketches for publication. When it is possible and desirable to use illustrations, use good photographs (original, of course) or pen drawings in good ink. The size of drawings should be two-thirds larger than size published. Bold lines reproduce better than fine. When illustrating an article with a number of diagrams, mark in order Fig. 1., Fig. 2. and so on, not close to the drawings and in black, but in light blue pencil on the margin and face side. Indicate on M.S. where these figures are to be inserted. Send all drawings or photographs flat and unfolded. We do not guarantee to return M.S. or Illustrations, unless postage is prepaid; and we do not hold ourselves responsible for their safe return.

Illustrated Interviews, No. 4.

TWO YOUNG NOTTINGHAM INVENTORS.

ANOTHER DIFFICULTY OVERCOME.

IT is sometimes hazardous for a journalist to interview one individual, but to have to interview two at a time presents peculiar difficulties, more especially when each happens to be an enthusiast brimming over with details of his subject, and anxious to make them clear to his hearer. Enthusiasm, however, is contagious, and when we were commissioned to "write-up" our present article, we lost sight of the difficulties in our interest in the subject.

Nottingham has been particularly useful in producing inventions which have been lasting in their utility, and which have done much to bring forward clever mechanism and wonderful devices. Once again, two Nottingham men appear with what bids fair to become a death blow to the alarming paragraphs about the danger of cinematograph shows.

Naturally reluctant to talk very much about themselves, but a great deal about their invention, we experienced some little difficulty in getting at the personality of these two young men, and in trying to find exactly what part of the invention was their particular portion. The way over the obstacle was to ask each for particulars about the other. Consequently, Mr. Roseblade was kind enough to say, in reply to our rather pointed question :—

"Yes, Mr. Schiller deserves all commendation for bringing our invention to a practical finish. You know he has been connected with lantern work, and has exhibited for many years both in England and abroad, making a special study of the bioscope and its workings. It was he who, after repeated alterations and the usual troubles which seem to accumulate in the perfecting of every mechanical

MR. S. J. ROSEBLADE.

MR. C. C. SCHILLER.

invention, finally made the machine on which our patent is applied."

"Stop!" cried Mr. Schiller. "You must not fill your paper with laudations about myself. It is Mr. Roseblade who you should speak about; for were it not for his inventive genius, his large experience of the electrical accessories used for both power and lighting, and his ten years' acquaintance with the electrical industry, we should not now be able to claim success. He has also had large experience in the practical working of high candle power lamps, both on shore and at sea, the switch that we use, for instance, being specially designed by him."

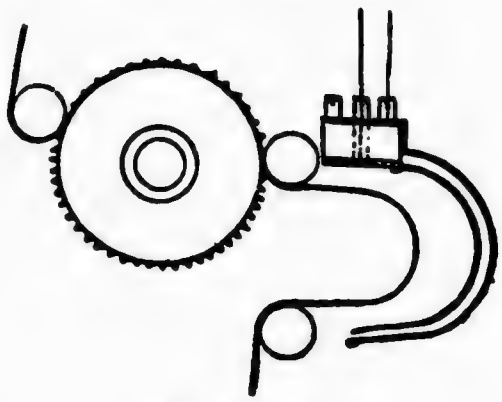
"How did you come to think of the invention?" we asked; and from the combined reply we learnt that Mr. C. C. Schiller, as animatographer, and Mr. S. J. Roseblade, as electrical engineer, were both fully aware of the ever-present danger of fire in the working of the bioscope, more especially with the powerful illuminant so essential to first-class shows. Both turned their attention to this particular object, and with united and combined efforts created the patent, for which they claim that the operator can now use any light of the highest power with the utmost confidence that the film will not fire.

"Our Magazine," said our representative, "is read by practical men, who naturally will be anxious to know how it is done."

The inventors' reply, which can be best described in their own language, is as follows:—

"By the action of two rotary sprocket wheels, working in conjunction with an intermittent motion between them, a loop of film is made (as shown in the annexed drawing), which is fed forward, and then taken up automatically, this action going on continuously whilst the pictures are being shown. Then to effect our purpose we shape two pieces of metal, electrically insulated from one another, to the loop of film, and fix them concentrically to one another and the loop of film in such a way that, when the machine is working normally, the loop of film clears the inner piece of metal. But immediately the film breaks it ceases to be taken up, and as the feeding wheel still continues to feed the film forward, the loop immediately increases above its normal size and instantly presses against the inner piece of metal, which is so constructed that the slightest pressure brings it into contact with the outer strip of metal, thus closing the electric circuit. And all danger is instantly over."

"But in order to complete the utility of the invention in connection with the use of the electric light," said Mr. Roseblade, "in connection with the machines, we cause an incandescent electric lamp to be lit simultaneously with the extinction of the projecting light, so as to avoid any



THE FILM LOOP.

inconvenience that might be caused by the sudden darkness, and thus facilitate the readjustment of the film if required. To effect this we connect the incandescent electric lamp with the two contact pieces of metal, so that immediately the electric circuit is closed the incandescent electric light is lit. Do you follow?"

"Yes," said our representative, "your invention certainly meets a long-felt need, and, as I understand you, it automatically cuts off the whole apparatus if the film breaks, and the light supplied by the fresh contact not only informs the operator of the state of affairs, but gives him the means of seeing how to repair same."

"That is so," was the reply of both in one breath.

"And what do the trade say of your invention?" we asked.

Mr. Schiller chimed in. "We can only

MESSRS. PATHÉ FRÈRES have a splendid new film entitled "The Two Little Vagabonds," which we think compares favourably with their previous productions. The two lads acting the principal parts are very clever, the situations are well worked out, and the scenery magnificent. The final scene where the youngest marauder, who is about four feet high, is taken to prison by two mounted policemen, and rescued by his elder companion, is enough to make the proverbial cat laugh. "The Magic Album" is also a fine and very clever trick subject, and is greatly improved by being coloured.

MR. R. W. PAUL has several up-to-date films this month. "The Great Channel Swim" is a series of pictures depicting Mr. Jacob Wolffe in and out of the sea at practice with his trainer. He is seen going out and returning after a six hours' swim, apparently none the worse for his long immersion, and the sea is shown at its roughest as it dashes and breaks on the shore. The pictures are of good photographic quality, and should prove of interest at the present time. "The Adventures of a £100 Bank Note" is highly interesting and amusing. The scenes are capitally worked out. We commence with the interior of a bank. The receipt by a lady of the note, the quick appropriation by a bystander, and its subsequent adventures, are told in a series of capital pictures. "How He Learned Ji-Jitsu" is a most amusing film. It is the history of a man about town with an athletic wife. She is in the habit of taking the law into her own hands when her hubby stays out late. He is persuaded by a friend to take lessons in Ji-Jitsu. The wife determines to do the same, with the result that the husband gets more than he bargains for upon their next trial of strength. The pictures are sharp and effective, and should be very successful. "Who Was to Blame?" is another good film, describing the misunderstandings of a wife who is jealous of her husband. Amongst others we would specially mention "The Pierrot and the Devil's Dice."

MESSRS. HEPWORTH & Co., in addition to a fine series of pictures of the French Fleet at Portsmouth, have also secured a view of London's reception to Admiral Caillard and his officers on their way to the Guildhall. They were also good enough to show us their latest subject, called "The Annual Trip of the Mother's Meeting"; a very good comic film, and the curate in charge of this boisterous collection of womanhood has our sympathy. Judging by this film, we are certainly of the opinion that the Christian Martyrs are by no means extinct.

MESSRS. CRICKS & SHARP have a good film called "Drink and Repentance," which is a convict story in nine scenes, and is at times both exciting, pathetic, and dramatic, and we can confidently recommend it. The nine scenes are most exciting and full of pathos, and good moral sentiment. As the title denotes, the subject is on the drink question, and shows the easy road to ruin. The scenes are laid in a public house, drunkard's home, prison cell, the quarries (showing a convict's escape), and the exterior and interior of the convict's cottage. The last scene shows the repentance of the convict, forgiveness and death of the wife, and re-arrest of the convict. The whole set of pictures is ingeniously carried out, and abounds in dramatic interest. The same firm have also, amongst other good films, a new one, entitled "Seaside in London," depicting the miniature seaside at Fulham Park, showing thousands of children indulging in paddling, building sand castles, and all the usual amusements indulged in by children at the seaside.

THE WARWICK TRADING COMPANY, LTD.' have been doing tremendous business with their film, "Whaling," and the sales of this subject, especially on the Continent, have been enormous. They have an excellent short comic called "What is it Master Likes so Much?" which is an excellent reproduction of a well-known poster; and their latest comic, called "McNab's Visit to London," is one of the funniest skits on the golfing craze we have ever seen.

MESSRS. WALTURDAW, LTD., at Dean Street, are making great preparations for the season, and their new films will be quite a feature amongst the Winter Exhibitions. The firm have supplied R. G. Knowles, the well-known entertainer, with quite a large selection of films, including Venetian, Rome, and Naples Pictures, in addition to several specialities from the series taken by their own representative in Jerusalem, including a street in Jaffa, oxen ploughing, camels entering Jerusalem, Holy Sepulchre, Mosque Omar, etc.

WE have received intimation of many new films and subjects that are in preparation, and which bid fair to create a sensation when produced during the winter. We understand that several of the makers are keeping them back until the light is too bad to allow duplicates to be made by copying.

PATENTS.

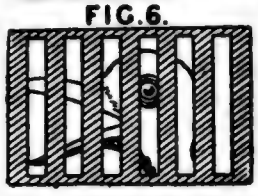
No. 7,406. Animated Pictures. BRAUN, E., 86, Hart Street, Southport. March 29.

Pictorial, photographic and other representations are made to appear as if animated. A composite picture, Fig. 3 is formed from two similar pictures of an object, drawn or photographed in slightly different positions, the two pictures being cut up into strips, and half of the strips *a*, *c*, *e*, &c. of one picture being alternately combined with half of the strips *o*, *q*, *s*, *u*, &c. of the other picture. A screen is placed over the composite picture, and, as shown in Fig. 5, only the strips of the first picture are visible. By moving the screen along, the first picture is hid and the second picture comes into view, as shown in Fig. 6 this change in the view being similar to a natural movement of the figure represented. Three or more pictures may be similarly combined, and a corresponding number of changes may be produced by movements of the screen, which in this case is formed with transverse as well as longitudinal bars. Instead of forming the composite pictures from complete single pictures, the screen may be employed in the preparation of the composite picture. Mr. R. R. Beard, the well known inventor of the automatic regulator for oxygen gas, holds a Patent the principle of which is somewhat similar to the above. Mr. Beard makes a composite transparency from two negatives. Thus about 100 lines to the inch represents strips of one view alternating with a similar number of strips of view from the other negative. A screen of opaque lines, 100 to the inch are superposed on this combination, the intermediate transparent spaces showing the views alternately, according to the position of the screen. In this manner dissolving effects in a single lantern may be obtained, but owing to the presence of the line screen absolute definition cannot be secured.

FIG.3.

FIG.5.

FIG.6.



No. 9,441. Kinetoscopes. AMART, T. 1700, Oregon Avenue, Washington, Columbia, U.S.A. April 25.

Relates to a compact form of Kinetoscope comprising a narrow circular or hexagonal casing *b*, Fig. 5, which encloses the operating mechanism and a narrow inner case *c* just wide enough to receive the film. On the rim of the case, a detachable mounting for an objective lens D is fitted. Light is admitted through a ground glass window H in the outer case and reflected by the surface I towards the objective opening. The window may be coloured amber or light blue to produce a sunlight or moonlight effect, and the surface I is of white cardboard or china. A mirror may be attached at a suitable angle outside the window H to reflect light through. The endless film which is contained in the lower portion of the inner case, in loose folds, is fed by the toothed roller L, Fig. 7, over guides G in front of

FIG.7

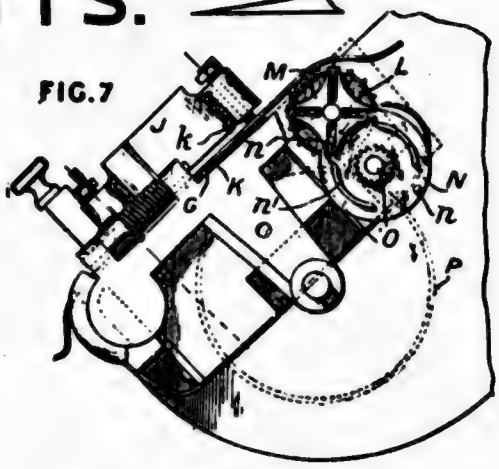
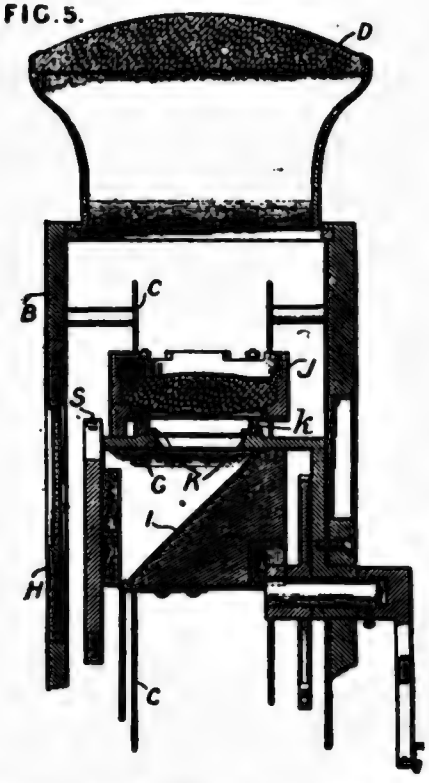


FIG.5.



he objective opening. The proper tension is supplied by friction strips K which are pressed against the film by springs *k* and, extending over the roller L, ensure its engagement with the film. The intermittent motion is produced by a star-wheel M, which is driven by pins *n* on a disc N. The latter is mounted on a spindle O and driven through gear-wheels by an external crank. The pins *n* and the segments n_1 alternately rotate and lock the feed-wheel L. A sector shutter S, Fig. 5, fixed to the other end of the spindle O, obstructs the light while the film is in motion. The portion J, which carries the lens and the tension device, is hinged to permit the removal or exchange of films, and on the underside is mounted a shutter, having an aperture equal to the size of one picture, which can be adjusted in accordance with the pictures on the film. When the apparatus is used for projecting pictures, the objective lens is replaced by a projecting lens, the window H removed, and the reflecting-plate I replaced by a mirror. The apparatus is arranged in the bottom of a case, which is also provided with a motor, an electric lamp, and a ground glass plate on to which the pictures are projected. If this plate is on the side of the case, a mirror is arranged to suitably deflect the rays.

THE MICROSCOPE AND ITS USES.

By Professor W. H. Golding.

THE works of Nature, marvellous and beautiful as they are, are yet in their beginnings and in many of their ultimate details, far too minute to be recognised by unaided vision. Even art can baffle eyesight, and skilful fingers have learned to execute work too delicate for the eye to follow with anything like ease and comfort.

There is, therefore, an obvious need for some aid by whose means the eye may see and closely examine objects too small for its unassisted powers. To such instruments we give the name of magnifiers or enlargers, or microscopes, *i.e.*, the means of seeing that which is very small.

To such instruments we owe much of our knowledge of the intimate details of natural objects, whether of the mineral, animal, or vegetable kingdom; and the question naturally arises, How and why they are able to render us such service?

Fig. I.

We shall find on consideration that we judge of the size of objects we see chiefly by the angle they subtend to our eyes, aided by the experience which "grows with our growth, and strengthens with our strength."

If we suppose that straight lines drawn from the extremities of the object meet in the pupil of the eye, or rather on the retina, after passing through the pupil, the angle included between such lines is that subtended by the object at that distance; and it is obvious that the size of the object being unaltered, the angle so included is smaller the greater its distance, so that there is a point well within the limits of ordinary vision beyond which these lines can scarcely be noticed to include any angle at all, but become apparently parallel or very nearly so.

If we look along a straight road, or an avenue of trees or buildings, we shall see the objects on either side appear to become smaller as they recede, and to approach one another until they seem to meet, the lines apparently tapering to a point; while a finger held up at a short distance from the eye, or even at arm's length, appears as high as a house or tree on the opposite side of the road, or a hill or lofty mountain a mile or two distant. Experience has taught us that these remoter objects are, in fact, far larger than they appear to be; but apart from that, there seems no reason for supposing that they are not really smaller than those nearer to us, and we probably should suppose so if called upon to use our vision for the first time, as a person might do who had been blind from birth, and had gained his eyesight as the result of surgical treatment in maturer years.

The artist, by the use of perspective, has learned to imitate Nature by showing things as they appear to be rather than as they actually are, and in this respect the art of civilised peoples mainly differs from that of the more primitive races of mankind.

Every photographer has probably experienced the disappointment of finding that distant objects appeared far smaller and more insignificant upon the focussing screen of his camera than they did to his eye, a line of distant hills or of lofty trees or buildings occupying a narrow and inconspicuous space upon the ground glass. His previous knowledge of the true dimensions of these objects had enabled him to form a mental picture of them far larger in proportion than that actually received upon the retina; but the lens brought these conceptions to the test of measurement, and at once dispelled the illusion.

But if an object at the distance of a few

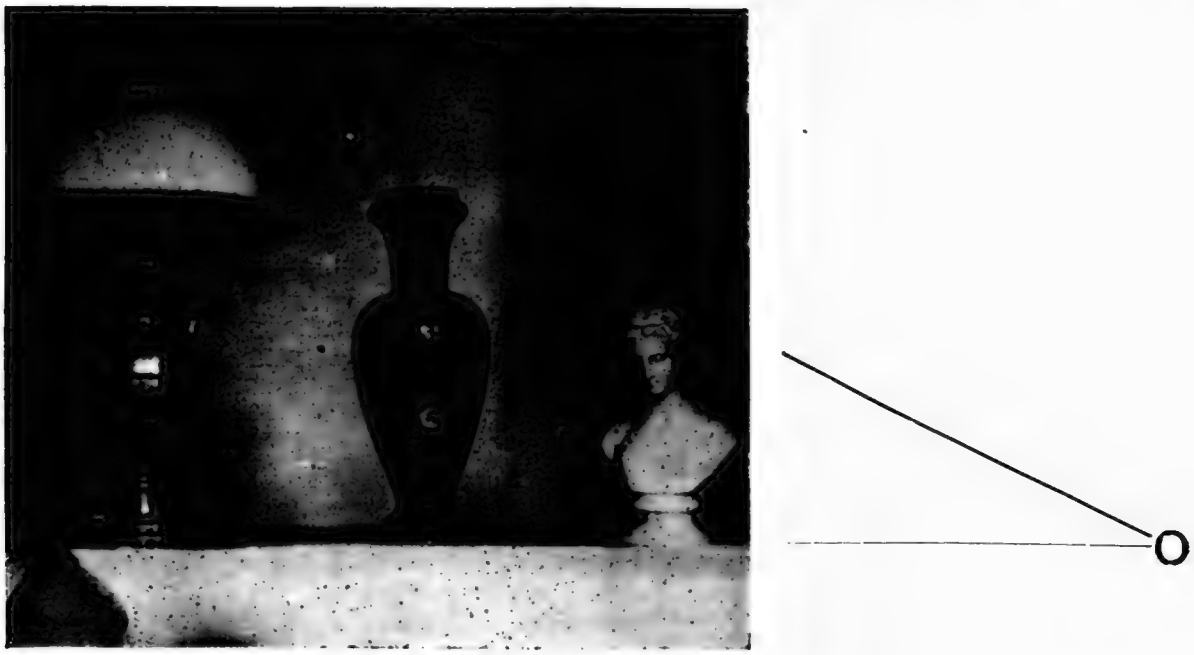


FIG. II.

The three objects in this photograph, viewed from a point O to the right of the bust, would all appear of the same height as they subtend the same angle.

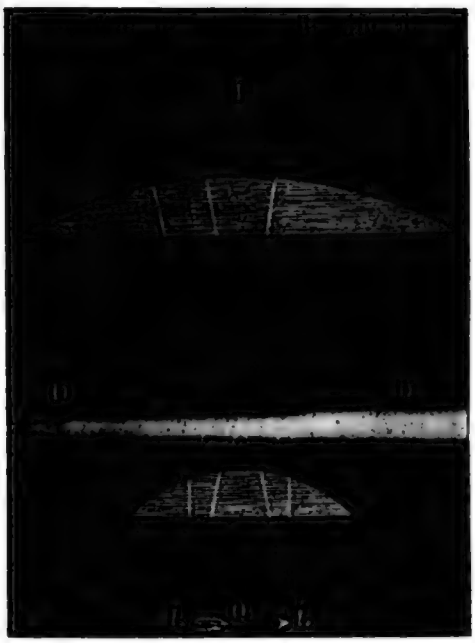
yards or feet appear larger than when a mile away, what must be the consequence of viewing it at a distance of an inch or a small fraction of an inch? Obviously so near a view must result in a very great increase of apparent size, and the impossibility of seeing more than a very small part of it at once.

Most persons see most distinctly objects at a distance of about ten inches from the eye, and few, unless extremely short-sighted, can see clearly at less than six inches.

The various forms of microscope, from the simplest to the most complex, accomplish this for us, their effect being practically to shorten the focus of the eye by causing rays to converge upon the retina which could otherwise only meet far beyond it, and many of which would never reach a focus at all, being already divergent, and tending to become more widely separated the farther they travel. The course of these latter rays must be reversed, and they must be caused to converge so rapidly as to be focussed distinctly upon the retina, the objects from which they proceed being thus made to subtend a very wide angle, and appear correspondingly enlarged. Hence we must obviously employ convex lenses, and the greater their curvature and consequent refractive power the greater the magnifying effect produced by their aid. Such a lens, usually of very short focus, we term a "Simple Microscope," its action being merely to refract the rays intended to enter the eye in the manner described.

Such simple instruments, being small and portable, are extremely useful for the first examination of minute objects or the details of larger ones, which are afterwards to be more closely and accurately observed. Many most valuable and important discoveries have, indeed, been made by no better aid; and as their cost is inconsiderable, and they occupy only a very small space, no one need fear the expense attendant on the commencement of microscopic study. If the lens be of high power, only a very small portion of an object can be seen at once; and as the purpose in view is not so much to enlarge it as to see it distinctly, it will be found that the lowest power by which this can be done will be the one to be preferred, a fact which the beginner usually fails to recognise until experience has brought it home to him, a remark which applies to every description of microscope, from the simplest to the most complex.

The simple microscope, however, is usually deficient in two qualities, which add greatly to the efficiency and usefulness of the instrument. These are flatness of field and depth of focus. By the former expression we mean that surfaces, actually level, shall continue to appear so when viewed through the lenses employed; and by the latter that points at slightly different distances from the lens shall be



O. Object. FIG. III. *D. Diaphragm.*

nearly, though they cannot be quite, in focus at the same time. Since rays which fall upon or near the margin of a convex lens come to a focus sooner than those which pass through its centre, we have to contend with "spherical aberration"; and when the central part of the field of view is clearly focussed, the marginal parts will be more or less indistinct, and clearness of definition in these portions can only be secured by sacrificing the sharpness of the central image; and since most natural objects are not level, but have surfaces more or less convex, the difficulty of seeing more than a very small part distinctly is greatly increased. This spherical aberration can be largely remedied by

using a diaphragm to exclude the marginal rays, but only at a considerable sacrifice of light. A flatter field than a single lens can afford can frequently be secured by the aid of a Doublet or Triplet, in which two or three lenses of moderate curvature, with a diaphragm placed between them to cut off the extreme marginal rays, will magnify equally with a single lens much more deeply curved.

But no lens or set of lenses of the same material can be wholly free from "chromatic aberration"; they must give fringes of colour, more or less, round the margins of objects viewed by their aid, with some loss of sharp definition, owing to some of the coloured images being slightly out of focus.

All these instruments, whether consisting of one or more lenses, are still simple microscopes, the rays of light being merely refracted so as to increase the angle at which they enter the eye.

In the more complete and perfect Compound Microscope the rays are further dealt with, the image produced by the first lens or set of lenses not being formed within the eye, but used as an object to be further magnified by a new system of lenses before we view it, so that we actually look at the image of an image.

Such a microscope may consist of two single lenses only, the first or object glass to produce the image to be afterwards further magnified by the eye-piece; but usually both eye-piece and objective are made up of two or more lenses, arranged as in the doublet or triplet already described, and acting as a single lens. The rays of light passing from the illuminated object through the objective are caused to converge to its conjugate focus, where they cross and afterwards diverge until they meet the eye-piece, and suffer further refraction and consequent magnification, being directed to the pupil of the observer's eye, and finally forming the desired image on the retina. If single lenses only were employed, it is obvious that no provision would be made to correct chromatic aberration, and the loss of distinctness involved would be fatal to the clear and accurate definition which is essential to the satisfactory examination of minute objects.

In the more complete forms of Compound Microscope, the various sources of error are anticipated and compensated with a degree of skill and accuracy probably attained in scarcely any other scientific instrument, the quality and transparency of the glass of which the lenses are made, its refractive properties, and the precise figure of each of the extremely small lenses employed, especially in the objective, being calculated to the utmost degree of accuracy; and the curves needful to produce the desired effect being most precisely followed, while the final polishing and fitting approach in the best instruments as near perfection as human skill can attain. The objective usually consists of three compound achromatic

FIG. IV. OBJECTIVE.

lenses of very small size, each of them having a convex of crown glass, with a concave of flint glass cemented to it by Canada balsam, so as to neutralise the dispersion of colour, while retaining much of the refractive power. Some of the objectives of high magnifying power have an arrangement for varying the distance between the component lenses slightly by means of a graduated screw collar, to compensate for the refraction due to the thin glass with which microscopic objects are usually covered and protected; while the modern forms of "immersion" objectives are designed to be used with a drop of water or some other fluid, such as oil, placed upon the covering glass of the

object, into which the front lens dips. By this ingenious arrangement, many rays of light are caused to enter the lens and take part in the formation of the image which would otherwise fall outside it or be dispersed by reflection from the polished surfaces, and lost so far as the purpose in view is concerned.

The action of the objective may be compared to that of a lantern lens, the illuminated object occupying the place of the slide. The rays proceeding from it, after passing through the lens will cross at a focal point, and diverge at an angle greater the shorter the focus of the objec-

FIG V. EYEPIECE.

tive, and the nearer it is placed to the object, forming an image, as the lanternist's lens does, at a distance of, perhaps, ten or twelve inches beyond the point at which they crossed. This image will be formed in the air, as no screen will be in position to receive it unless a photographic plate should be placed there, when the image will be impressed upon the sensitive surface as in an ordinary camera.

If not so intercepted, the rays forming the magnified image will meet the lenses of the eye-piece, which, in the form usually called negative, invented by Huygheus for use in the astronomical telescope, consists of two plane-convex lenses placed at a distance from one another equal to half the sum of their focal lengths, and with their plane sides uppermost. The first or lower of these lenses, called the "field lens," receives the divergent rays and refracts them inwards, causing them to reach a focus at a plane in which a diaphragm is placed to cut off the extreme marginal rays, the image so formed being finally still further refracted and magnified by the upper or "eye lens," by whose aid the rays are directed into the eye of the observer.

Thus an increase in magnifying power may be obtained either by increasing the power of the objective or of the eye-piece, and both means are usefully employed according to circumstances; but as every imperfection in the objective or the image produced by its aid is enlarged and exaggerated by the eye-piece, it is desirable to rely mainly upon it for any increase of magnification, and to use an objective of shorter focal length rather than a more powerful eye-piece, unless it should be inconvenient to place the object glass very close to the object under examination, in which case an increase in the power of the eye-piece may prove very useful.

Objectives of high magnifying power are frequently of such extremely short focal length as almost to touch the object under examination, and it would be impossible to bring them nearer without actually pressing upon it.

The eye-piece, however, serves two other important purposes.

The image formed by the objective is of curved form, having a convex surface, so that the marginal parts would be very indistinct when the centre was in focus; but the field lens of the eye-piece reverses the curve and renders it concave, while the eye lens directed towards a concave image flattens it, rendering its apparent surface almost level, and thus secures flatness of field.

It also serves to correct chromatic aberration due to the rays from the blue and violet end of the spectrum being more refrangible, and therefore coming to a focus sooner than the more luminous red and yellow ones. In practice, it is usual to *over correct* the objective so as to reverse these rays, while the eye-piece, being uncorrected, undoes the over correc-

tion, and brings both sets of rays, with those which intervene between them, to very nearly the same focal distance, thereby almost completely correcting chromatic aberration.

Of the mechanical arrangements of the microscope it is not necessary to say much. They include a stand sufficiently firm to keep all its parts in the required positions without vibration or unsteadiness, which would be fatal to any accurate observations, especially when high powers are in use. There must also be a stage to support the object, and to retain it in the field of view, and some means of illuminating it by reflection from a mirror placed below the stage, and usually of concave figure; a system of condensing lenses to concentrate the light reflected from the surface of the mirror upon such objects as are only partially transparent, or need especially brilliant illumination to display their structure; and a condensing lens, usually plano-convex, to converge the rays from a shaded lamp upon the surface of objects which are opaque, and require to be examined by reflected light, the lamp being usually placed as near the level of the mirror or condensing lens as can conveniently be arranged. There must also be a tube to contain the objective and eye-piece, and to keep them in their proper positions, so that the rays may pass through them in a direct path to the eye of the observer, and all other light be excluded, as in the case of the optical lantern or the photographic camera; and a rack and pinion or other arrangement for regulating the distance of the lenses from the object and from one another, so as to secure accurate focussing.

These may appear to be minor details; but the efficiency of the instrument depends very largely on their being attended to with the utmost care, both by the maker of the microscope and those who use it, and, perhaps, there are few instruments of which a person, unaccustomed to its use, is less competent to judge. Experience alone can enable him to recognise the qualities which distinguish a good from an inferior microscope and the purchaser must rely upon the advice of a skilled optician or of an experienced adviser in the selection of his instrument, if he desires to secure precisely such a one as he requires.

There is one form of microscope which has always appeared to the present writer to possess so many advantages as to render its use very desirable whenever it can be obtained. This is the Binocular arrangement, by which both eyes are enabled to take part in the observation, whereby a stereoscopic effect is obtained in the case of objects having sensible depth or thickness, and the eyes are enabled to work with greater ease and comfort than when only one of them is engaged at a time.

For the means of securing this advantage we are indebted to Mr. Wenham, who designed a form of prism which divides the beam of light into two parts after passing through the lenses of the objective, and directs one of them through a tube leading to the right eye, while the other enters the left, each arm of the divided tube of the microscope being provided with the usual eye-piece, and two eye-pieces being thus employed though but one objective. If both are well and equally illuminated the effect is very pleasant to the eyes, each of them taking its usual share in the work of observation, and the apparent solidity of the object being greatly increased in accordance with the laws of stereoscopic vision. The Binocular Microscope, however, works best with the lower powers; those which give the highest magnification not being equally suitable for use with the Wenham prism, which is, therefore, usually so mounted that it may be drawn aside when not required, and as readily replaced on occasion.

Thus important optical principles, including an intimate acquaintance with the properties and laws of light, and with the refractive qualities of glass and other transparent materials, together with no small degree of mechanical and manipulative skill, are necessary for the accurate construction and effective employment of the microscope; but the beauty of the images which it is instrumental in revealing to the eye of the careful observer, and the insight which it enables him to gain into the marvels of creative skill, as displayed in even the minutest details of the structure of natural objects, will well

repay all the labour; and a more fascinating pursuit than the use of this beautiful instrument, and the study of the objects which it is so well calculated to display, it would be difficult to imagine, as every one who has ever tried it for himself, and concentrated the powers of his intellect upon it, knows better than any words can express.

FIRES FROM MOVING PICTURE EXHIBITIONS.

[Abstracted from the *Scientific American.*]

THE danger attending the use of moving picture apparatus is due to the highly inflammable character of the celluloid film bearing the pictures, and to the intense heat produced where the light is condensed upon the film. This heat is sufficient to ignite the film at the projection aperture if the light is allowed to rest continuously upon one portion of the film for a few seconds; but when the machine is in operation, the film, of course, travels so rapidly across the projection aperture that the heat is without effect upon the film. The projection aperture, therefore, is the point at which the film is most apt to take fire, and in almost every instance the ignition takes place because a portion of the film is held stationary at the projection aperture for a time.

CONTRIBUTORY CAUSES

This may be brought about in various ways. The film may break below the projection aperture; the feed mechanism may become jammed and inoperative; it may lose its hold on the film; the crank may become loose on the shaft of the feed mechanism so that its turning will not feed the film forward; a small fragment may be torn off the film and lodge in the projection aperture, where it will be exposed to the full heating effect of the light; or the operator may stop turning the crank of the film feed mechanism for any one of a variety of reasons. He may become faint or giddy from the heat or from escaping gas; his attention may be suddenly distracted, and he may forget to keep the film feed mechanism in motion; or he may stop the feed of the film intentionally and neglect to cut off the light.

PREVENTIVE MEASURES.

Fires have resulted more than once from each of the foregoing causes, and it is practically impossible to construct moving picture apparatus in such a way as to prevent the film from occasionally taking fire at the projection aperture. It is possible, however, to prevent serious consequences from the ignition of the film at this point, and this may be done by simply preventing the fire from following the film from the projection aperture to the reels upon which the film is wound. Ordinarily, these reels have from eight hundred to twelve hundred feet of film wound on them, consequently, if a flame reaches either of these reels, the fire that results is so large, so hot, and so difficult to extinguish, that great damage to the building is almost certain to result, to say nothing of the panic that is always caused when a flame of any size breaks out in a place of public entertainment. If, however, the film burns only at the projection aperture, the flame will be small and do no damage.

LIMITING THE FIRE AREA.

To limit any fire that may occur from a moving picture exhibition to a few inches of the film, it is only necessary to inclose both the film supply reel and the take-up reel in fireproof chambers, and to provide valves leading into said chambers through which the film can pass freely while the film feed mechanism is in operation, but which will close instantly when the film feed mechanism ceases to operate or the tension upon the film is relaxed. If the film supply reel and take-up reel are inclosed in such fireproof chambers or magazines, the ignition of the film at the projecting aperture is a matter of very little consequence, as the burning of the film at that point immediately causes a reduction of the tension on the film, and permits the valves through which the film passes into the magazines to close, and so prevent absolutely the passage of the flame into the magazines. Properly constructed magazines for the film supply reel and take-up reel can be applied at very small cost to any moving picture machine, and if the machine is equipped with such magazines, it may even be overturned without causing any serious damage.

ALTERNATIVE METHODS OF PREVENTION.

Other methods of preventing flames at the projection aperture from reaching the reels of film have been proposed, such as a non-inflammable plate of considerable size arranged above the projection aperture, and extending rearward and to the sides for a considerable distance. Such a plate will sometimes prevent a flame at the projection aperture from reaching the film on the supply reel; but it is by no means as certain in its action as the magazines already mentioned, for the film above the plate is fully exposed, and if the flame rises above the edge of the plate it may strike the exposed film and set fire to the entire reel. Another device which has been proposed to prevent the transmission of a flame from the projection aperture to the film reels consists of a pair of flat tubes or guides extending above and below the projection aperture, and made of non-inflammable material, the idea being that, in the small space afforded by these guides for the passage of the film, a flame will be extinguished. As a rule, this device operates successfully; but as the reels themselves are exposed, a flame flaring up suddenly at the projection aperture may reach one of the film reels in spite of the guides.

ENGLISH V. AMERICAN METHODS.

A plan of preventing fires from the use of moving picture apparatus that has been adopted in England to a considerable extent is to inclose the entire apparatus in a fireproof box large enough to contain the operator also, and to lock the operator in during the exhibition. This plan has the merit of making operators careful; but many grounds of objection to it are obvious, and American operators of moving picture apparatus are unwilling to be locked in such a box while giving an exhibition.

Considered from all points of view, the most satisfactory and thoroughly reliable means for rendering moving picture apparatus safe is a fireproof magazine for the film supply reel, and a similar magazine for the take-up reel. Such magazines answer all the requirements and have the advantage of being readily portable, and of being easy to apply to any standard moving picture machine.

BAXTER MORTON.

We have others!

THE "WALTURDAW" Co., Ltd.,

Manufacturers of Cinematographs and Films.

WRITE US—

Sir,—As an instance of the far reaching effect of an advertisement in your paper, it may interest you to know that we have just had an enquiry from far away South Africa, through our advertisement in your capital little monthly.—Yours, etc., GEO. H. J. DAWSON, Director, 3, Dean Street, High Holborn, London, W.C.

THE MICROGRAPH Co., Ltd.

Dealers in Cinematographs, Films, etc.,

WRITE US—

Sir,—You will be interested to know that as the result of one or two small advertisements in your paper. We have received several applications for goods, from different parts of the world, including South Africa and Canada. Though the new edition has not been long out, it appears to have penetrated into fairly remote parts, and to our mind shows how anxiously peo ple grasp at a publication dealing with the Cinematograph and like subjects.— Yours etc., F. MORLEY, 7, Great Queen Street, London, W.C.

Any difficulty experienced in obtaining The Optical Lantern Journal early in the month, can be obviated by sending a 4/- postal order to the publishers, Heron & Co. Tottenham Street, London, W., when a copy will be posted each month directly it is published.

Optical Illusions.

No. VIII.

By EDMUND H. WILKIE, *Of the late Royal Polytechnic Institution.*

CABINETS have always been favourite media with illusionists, as they offer special facilities for concealment of apparatus, and are usually handsome pieces of stage furniture apart from their actual use. In all exhibitions of conjuring "The Magic Cover" plays a prominent part, although in some cases it is made of apparently innocent material such as an ordinary newspaper. When a watch is to be manipulated it is most frequently placed in a box, a card is changed by being placed in a small case, wine and water having been mixed together in one decanter are afterwards separated, but always while hidden from view by "The Magic Cover," and so, in allusions on a larger scale, curtains and draped chairs, boxes and cabinets are just as frequently used.

There are so many kinds of cabinets that we might follow this branch of the art of deception to great length; but as we are at present concerned with optical illusions only, we shall give our attention exclusively to those few which are indebted for their powers to the science of optics.

One of the most mysterious of these cabinets was invented by Mr. Thomas Tobin, and exhibited in the small theatre of the late Royal Polytechnic Institution.

It was described in the programme as "The Proteus Cabinet," or "We are here, but not here," and by its means a series of startling changes and disappearances were effected. On to a brilliantly lighted stage a large upright cabinet was wheeled (represented in Fig. XXV.), the three sides and the door being panelled, four legs terminating in castors supported it, and a handsome moulding finished off the top. The inside was tastefully decorated with a small pattern paper in white and gold, a large railway lamp was let in through the ceiling for illuminating, and on the floor was a thick sheepskin rug covering it all over. There was also a post in the centre extending from floor to ceiling. While some of the transformations were being accomplished the cabinet was wheeled about the platform to prove that no connection existed with the stage, and to facilitate moving the

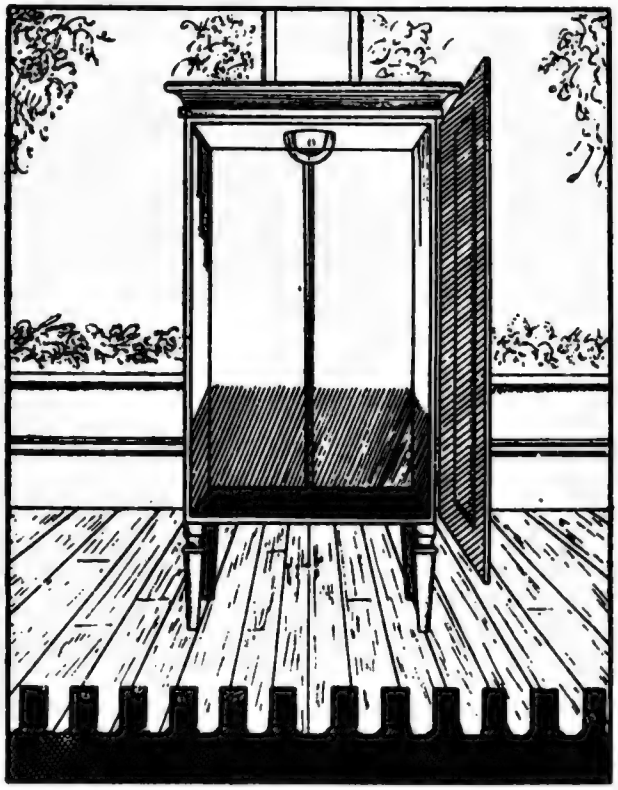


FIG. XXV.

cabinet it was furnished with large brass handles at each angle of its sides, much the shape of those now placed on triple lanterns for the purpose of raising them.

The cabinet being placed before the audi-

ence, was opened so that all could see that it was quite empty, and the door being closed, the whole thing was turned round to show the sides and back, when presently a tap was heard on the door, and, on being opened, out jumped the programme boy of the Institution, much to the surprise of those who had just seen that the cabinet was empty.

After this it was considered advisable to send an assistant inside to sound the walls and prove that nothing was hidden; but no sooner had he stepped in than the exhibitor banged the door and shut him in. Contrary to all expectation, he did not attempt to get out, there was no knocking on the door, all was quiet, until at last the lecturer, appearing a little anxious, gently rapped on the panel and called out, "Are you all right?" but no answer was returned.

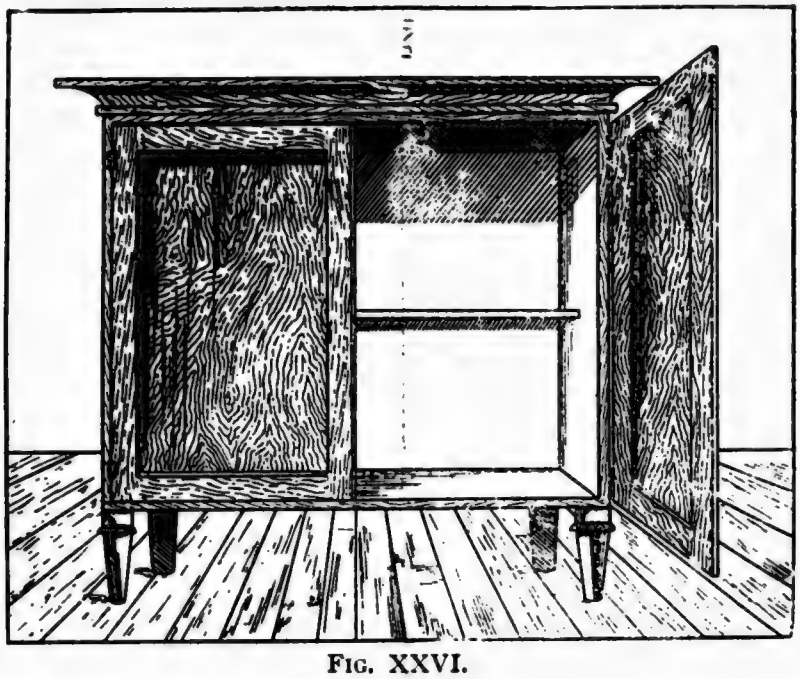


FIG. XXVI.

One of the other assistants then threw open the door, and there was seen, not the assistant, who had gone in, but his skeleton, standing against the pillar in the centre of the cabinet. The horror-stricken exhibitor at once removed the melancholy remains and closed the door, when almost immediately a tap was heard, the door was opened, and out walked the assistant. A number of changes of this description were worked by means of this cabinet, but all on the same lines as the foregoing.

Now let us examine the cabinet and see how it was done. The whole secret lies in the fact that two mirrors are concealed in the sides of the cabinet, hinged at the back corners, and opening towards the centre post. They extend the whole height of the interior, and, when not in use, their reflecting surfaces are folded flat against the wooden sides, their backs being papered to match the rest of the cabinet walls.

It will be seen by this that, when their front edges rest against the centre post, they occupy the same relative positions as those under the table in the "Decapitated Head" illusion, and that, when looking into the cabinet, the back, which we fancy we see, is simply the reflection of the two sides.

This leaves a triangular space formed by the three points, the two back corners, and the post, hidden from view, in which one or more persons may be concealed.

To perform the changes described, the cabinet must first be prepared by placing at the back a skeleton and a programme boy, and shutting the mirror against the post to hide them. When brought before the public it at first appears empty, then as soon as the door is closed the programme boy comes from behind the mirrors, carefully closing them again, and standing before the post. Next the assistant steps in and, the door being closed, changes places with the skeleton. The cabinet being opened and the skeleton being removed, the door is once more closed, when the assistant folds both mirrors back flat against the walls (into which they fit) and, tapping at the front door, makes his appearance. The cabinet is now clear, and any person may walk in and round the post without discovering the secret.

Another cabinet which has been much used by illusionists is represented at Fig. XXVI. In appearance it is something like a large

wardrobe, excepting that it is raised on legs to about twelve inches above the level of the stage. Two doors form the front, and when these are opened the whole of the interior is exposed to view. It is often built of varnished pine with a few incised lines for ornament, which gives it a very bald appearance, and seems to leave no opportunity for concealment.

From side to side runs a shelf, which in width extends about half-way from back to front. Sometimes this cabinet is used in conjunction with a trunk for the performance of the "Great Box Illusion," which is worked in the following manner:—

Two or three persons having inspected the cabinet, of course, in vain, are invited to look at the box. It is a large panelled affair, as represented at (B) Fig. XXVII., and an assistant being placed inside, it is closed and corded as will be seen in the illustration.

It is then shut in the cabinet, and after an interval the doors are opened, the box is removed and uncorded, but on opening it the prisoner is found to have disappeared. The cabinet, which is fully exposed to the public gaze, and quite empty, is closed, but in a moment a knock is heard, and on opening the door once more out steps the assistant.

How this is accomplished a little explanation will show. In the first place, the box, as I have said, is panelled, and at one of the ends the panel is made to slide out as at (C) Fig. XXVII., so that the person inside finds no difficulty in pushing aside the cord and issuing forth. It is then closed with a spring, and the next operation is to lie down on a shelf 2 (A), Fig. XXVII. He then reaches to the roof and lets down a mirror No. 1 (same diagram), which is hinged at its back edge, the front edge being lowered until it rests on the edge of the shelf, when being at an angle of forty-five degrees with regard to both the top and the back of the cabinet, it reflects the top in place of the back. Behind this mirror the assistant lies concealed until, the doors being closed, he pushes the mirror back into its former place, and taps at the door to be let out.

I might multiply the different ways in which these cabinets can be used; but I think that these short expositions of the principles upon which they are arranged will explain to the readers all they wish to know.

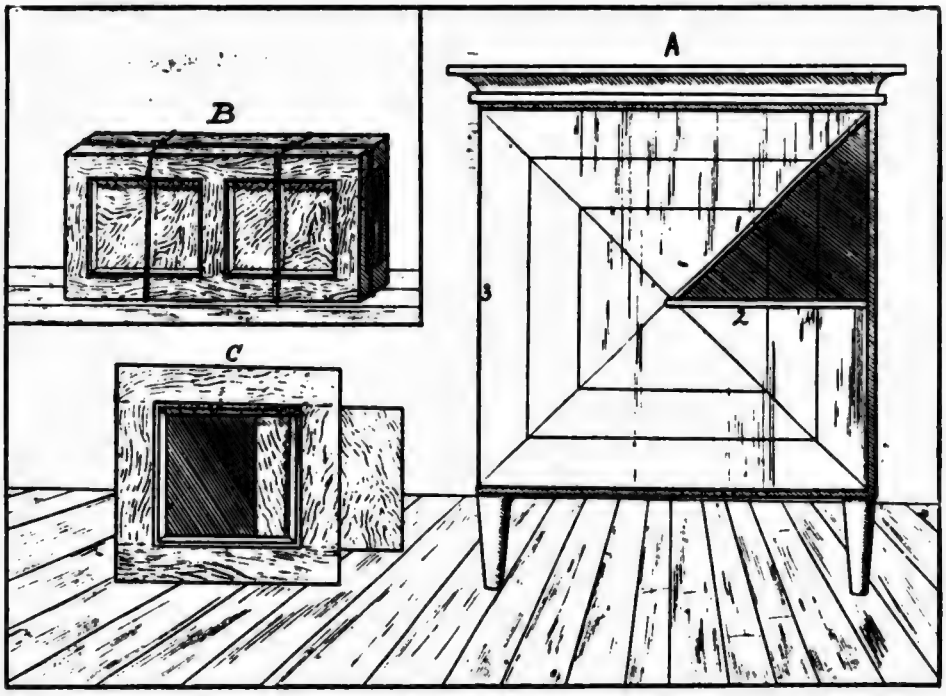
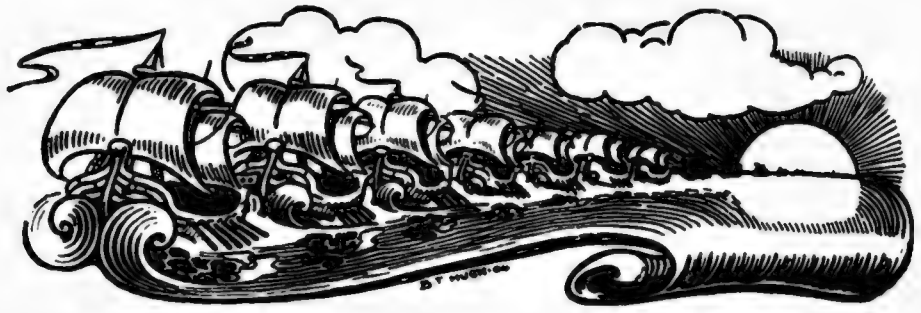


FIG. XXVII.

The magnitude of this subject and the numberless applications of these principles would almost induce me to continue this series of letters into what the Germans term the "Ewigkeit"; but I have already trespassed upon our readers' attention for such a lengthy period that I must now say "Good-bye to Modern Optical Illusions."

All the foregoing descriptions have been written from personal observation, and the writer can only hope that if they do not teach anything absolutely new, they may at least be the means of creating an interest in the minds of the rising generation in one of the most fascinating branches of Optical Science.

All rights reserved. The illustrations in these articles are copyright.



Stereoscopic Notes.

Exchanging Stereoscopic Prints.

An organisation, with which many English stereoscopic workers may not be acquainted, is the "International Photographic Exchange." We take this opportunity of bringing it before the notice of our readers, insomuch as the organisation includes a "Stereoscopic Division," through the agency of which prints may be exchanged for pictures taken in all quarters of the globe. This Division is under the management of Dr. C. H. Gardner, Marine Hospital Service, Galveston, Texas. The Stereoscopic Division of the I.P.E. was started about eighteen months ago by Mr. H. W. Beers, of Chicago. Mr. Beers not having time, the Committee were fortunate in securing the interest of Capt. H. E. Weaver, of Washington, D.C. Through his efforts the first "album" was arranged, and a most creditable beginning made. Gratifying as were the results of his enthusiastic application to the work, his zeal caused him to believe that it required more time than he could grant, and the directorship was transferred to Dr. C. H. Gardner, then of Key West, Florida. A better choice could not have been made. Taking up the work so well begun, he has carried it forward with most commendable energy and enthusiasm, with the result that albums have been got out in rapid succession, each an improvement on its predecessor. These collections now contain between fifty and seventy-five fine examples of stereoscopic photography, and they are routed to all the stereo workers sending in prints. A similar work to the above is being done in this country by the United Stereoscopic Society, though not on so large a scale. We understand that the Stereoscopic Division includes good stereo workers not only in the U.S.A., but also in Holland, Finland, and Germany.

Peculiar Stereoscopic Phenomenon.

Mr. Fayette J. Clute, Editor of *Camera Craft*, San Francisco, sends us a letter in which he says:—"I have some stereo prints that were sent by a correspondent, who had been working along the lines laid down by Mr. Robinson (in *Camera Craft*). He made two stereo exposures from the flat roof of his residence, one with the ordinary separation of the lenses, and the other with a separation of several feet. The peculiar part of the matter was that, while one set looked as though a stereoscope gave the feeling that the view point was about the actual height above the foreground, the other set seemed to have been taken from a point much higher. Have you ever noticed this effect, and what can you offer as an explanation?" We have our own theory to offer; but before doing so would like suggestions from stereoscopic workers, who have had the same or similar experience. Please send along your ideas to the Editor.

Stereoscopic Picture Post Cards.

We have been asked, over and over again, whether or not stereoscopic pictures could not be applied to post cards? The answer is in the affirmative. The standard post card measures $3\frac{1}{2}$ in. by $5\frac{1}{2}$ in., so that, divided into two spaces, $2\frac{3}{4}$ in. by $3\frac{1}{2}$ in., there is therefore quarter inch to spare if we trim the prints $3\frac{1}{4}$ in. in height, and on this spare space at the foot we may write or print the title. Such pictures can be supported by a spare stereoscopic mount when examined in the stereoscope; and there is no reason why the best results should not be obtained. As a matter of fact stereoscopic pictures, which

measure more than 5½ in. in width (*i.e.*, the pair, and print surface), tend to give trouble to the average individual when attempting to coalesce them in the stereoscope, 2¾ in. being the most suitable displacement for corresponding foreground images, as was stated in last month's notes.

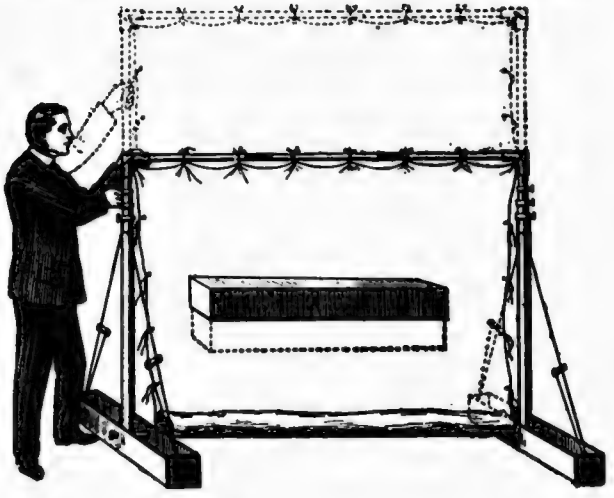
Atmospheric Perspective in Stereoscopic Views.

A point which is often overlooked by stereoscopists is that the charm of atmospheric perspective may be included in a stereogram with advantage. Although the composition of the example illustrated on this page is not all that one might desire, the softening off of the background is very effective, and lends a charm to the picture. In many instances it may be necessary to use a deep focus lens or lenses in making stereograms; but where pictorial results pure and simple are desired, a shallow focus lens serves the purpose well.

Photo by W. SPRAEKNER.

A NEW SCREEN ELEVATOR.

MESSRS. BEARD have just sent us particulars of a telescopic screen elevator, which they claim to be the only screen that can be erected single-handed. In churches and halls, where no provision is made for hanging the sheet, or where no hooks, nails, or pulleys may be fastened to the walls, it will prove invaluable. The uprights are strongly made of drawn steel telescopic tubes, and the top and bottom poles of best pine fitted with ferrules.



Correspondence.

DIFFICULTY IN OBTAINING COPIES.

Sir,—Referring to your remarks addressed to a correspondent *re* the delay in obtaining a copy of the Lantern Journal. We find the same difficulty here. This month's issue is to hand this morning notwithstanding the fact we have it sent direct from W. H. Smith & Son, the Strand. It is not always the fault of the newsagent and where a customer objects to paying a yearly subscription, what is the newsagent to do?—Yours, etc., A. E. JENKINSON, Manager, The South Coast Bible and Tract Association, 7, King's Road, St. Leonards-on-Sea.

A BIG ENQUIRY FROM HELSINGFORS.

Sir,—I take the liberty of asking you kindly to give your advice in the following matter:—I have several years intended to buy an optical lantern, but have not hitherto been able to decide upon what or where to buy. I have read for many years THE OPTICAL LANTERN, *t.w.s*, your paper and its predecessors. I have bought books (Pringle, Hepworth, Norton, "an expert," etc., etc.). I am still not in a position to choose what would suit me. I want to get a lantern and apparatus which shall enable me to project not only at home the usual slides, but also to undertake microscopic, polarising, spectroscopic, chemical, and magnetic experiments. I am living in the country, near to town. The only illuminants possible are, I suppose, oil or acetylene. Oil, I think, is out of question. But acetylene? I put this very question to two leading manufacturers; the one answered: "It is only right that we should tell you that limelight is absolutely necessary for microscopic work. A less powerful illuminant is of no use whatever." The other firm said: "It will work well with a microscope; but the polariscope would not be quite so successful, so we omit this and slides for same." In Mr. Hughes' price list is quoted an extract from the *English Mechanic*, where the great expert, Lewis Wright, says: "I took with me a 'lantern polariscope' with reflecting bundle of glass. The large end was too small to fit any lantern Mr. Hughes had, being fitted for 3½ in. condensers, while his were 4 in. All we could do was to prop it up on packing, and insert as centrally as possible into the large flangenozzle, and the disadvantage in want of exact centreing must have been perceptible. But such as it was, I proved by experiments with (1) selenite and (2) crystallisation slides, 1¼ in. diameter, and (3) with crystals of calcite nitre and topaz, that the lamp (Pamphengos) had power enough to project these well on a disc of 5 ft. in diameter. I never expected to see this attained with any oil light, and that it can be done will place many experiments, before impracticable without gas apparatus, within the reach of country teachers and others." Two manufacturers, who, of course, most willingly wish to sell their apparatus, tell me, honestly enough, that acetylene is of no use for said experiments. But a renowned, world-famed expert in the lantern circle states that even oil light has the capacity of projecting these effects. What shall I believe in? Who is right? As to the apparatus recommended to me, I have been told the most contradictory tales, too long to quote here. It is well-nigh impossible for an amateur to find out and select the material that would answer his purposes. All books and papers written upon the optical lantern deal with the matter almost solely from the professional point of view. For instance, *re* illuminant, there are only lengthy explanations upon lime and electric light. I should like to know in how many cases an amateur can avail himself of this illuminant? But acetylene is very scantily treated. Undoubtedly it is of much higher standing than oil, but I have never found a book of its drawbacks, its merits, or its limits. In my opinion, a book or some pages in your valued journal, fully devoted to the needs of an amateur, of apparatus, slides, etc., for small shows would meet with much approval. A book which told the amateur what he ought to buy, to pay (approximately), and where to buy, for instance, for a supposed given small entertainment, would, I am sure, find a ready sale. Do you think that I for, say, £20, could get the apparatus and slides for the experiments mentioned? Could I, perhaps, find some way to buy same secondhand? Where? Do you think that an advertisement in your journal and some other would help me? I beg you kindly to excuse the trouble I have caused you, and also my bad English.—Yours, etc., KARL ROSSANDER, Helsingfors.

[We have made arrangements with an expert for a series of articles on the subject in question, which we hope to publish very shortly. Our Correspondent will no doubt find this series of great service, as will also any other readers interested in this beautiful branch of lantern work. Meanwhile, we think our Correspondent will do well to send an advertisement for insertion, under miscellaneous, to our publishers.—ED.]

GORDON COLLEGE AMATEUR PHOTOGRAPHIC ASSOCIATION SEND THANKS.

Sir,—I am directed by my Committee to convey to you the best thanks of our Club, for sending your interesting journal to us. I enclose a cutting from a daily paper containing a report of our annual meeting, also a syllabus for the ensuing half-year which will give you an idea of our doings. Wishing the Optical Lantern and Cinematograph Journal every success.—Yours, etc., C. T. SEELEY, Hon. Sec., 83, Yarra Street, Geelong.

WILL FIRMS WANTING BUSINESS REPLY.

Sir,—Would you kindly let me know if there is any one else besides Walker, Turner, Dawson, and Howard who deal in secondhand films and machines. I correspond with all the film makers, viz., Urban, Paul, Warwick, Hepworth, Gaumont, Pathé, and Hughes, and would like to hear from others who handle secondhand films. If it is not too much trouble you might let them have my name and address, by so doing you will oblige.—Yours, etc., C. A. CORNWELL, 368, Lygon Street, Carlton, Melbourne.

BRITISH MUSEUM 7 SE 1905

NEW FILMS.

No. 35.—Drink & Repentance. A Convict Story in Nine Scenes. Exciting, pathetic and dramatic. Length 570 ft. Price **£14 5s**

No. 38.—Cricket Terms. Illustrated in Ten Short Humorous Scenes, Length 320 ft. Price **£8.**

No. 30.—The Pilfered Porker. Tramp steals pig, exciting chase by crowd over ricks, gates, etc. Superb Quality. Length 220 ft. Price **£5 10s.**

No. 36.—A Quarter Day Episode; or, Its Cheaper to Move than Pay the Rent. Full of humour and comic situations. Length about 300 ft. Price **£7 10s.**

No. 32.—She WOULD Sing. A highly humorous film in Five Scenes. Length 235 ft. Price **£5 17 6.**

No. 33.—The Sailor's Sweetheart. Length 160 ft. Price **£4 3s.**

Attempted Nobbling of the Favourite. A Tale of Love and Villany in Five Scenes. Length 560 ft. Price **£14.**

Write for Price Lists of the Queen Bioscope.
POST FREE BY RETURN.

CRICKS & SHARP,
7, GT. QUEEN STREET, KINGSWAY,
LONDON, W.C.
Telegrams: Biolesque, London.

THE BRIGHTEST LIGHT
IN THE TYPEWRITER WORLD
The Standard Visible Writer
The OLIVER Typewriter
Its record has never been equalled
Puts all else of the typewriter world in the deepest gloom
Write for Catalogue
OLIVER TYPEWRITER COMPANY, LTD.
75 Queen Victoria St. LONDON E.C.

DARLINGTON'S HANDBOOKS

Edited by RALPH DARLINGTON, F.R.G.S.

Visitors to London (and Residents) should use

DARLINGTON'S LONDON & ENVIRONS,

By E. C. COOK and E. T. COOK, M.A.
4th Edition Revised, 5/- 24 Maps and Plans, 60 Illustrations

DARLINGTON'S HANDBOOKS, 1/- each,
Llangollen: DARLINGTON & Co. London: SIMPKIN'S.
Paris and New York: BRETANO'S.
The Railway Bookstalls and all Booksellers.

Pattern A Generator.

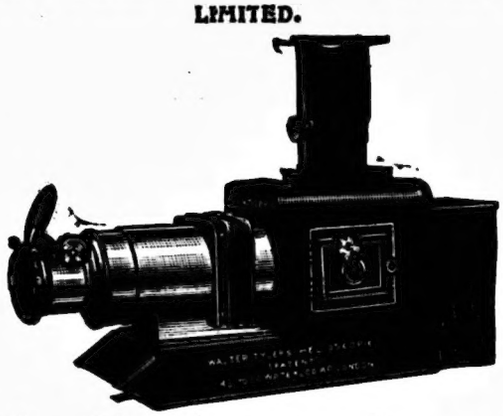
Acetylene.

The "INCANTO" Appliances for Lantern and Temporary Lighting purposes have proved the

BEST & MOST RELIABLE.

Thorne & Hoddle Acetylene Co., Ltd.,
151, VICTORIA ST., WESTMINSTER.

WALTER TYLER
LIMITED.



48 TO 50, WATERLOO RD., S.E.
(Between Waterloo Station and Waterloo Bridge).

The Celebrated "Helioscopic" Lantern as shown above, complete, **£4 4s.**

SLIDE HIRE a Speciality.

Subscription of £1 1s. entitles subscriber to use of 450 slides.
Subscription of £2 2s. entitles subscriber to use of 1000 slides.

A Library of over 800,000 Slides to select from.

The Optical Lantern & Cinematograph Journal.

PRINCIPAL CONTENTS OF EACH ISSUE.

Back Numbers may be obtained from the Publishers :—

E. T. HERON & CO., 9 & 11, Tottenham Street, London, W.

Single Copies 3d., by Post 4d. *Annual Subscription 3/-, by Post 4/-*

No. 1—NOVEMBER.

Illuminants for Optical Lanterns, by Professor W. H. Golding
400 Arc Lamps used for Cinematograph Work
Stereoscopic Notes
Some Notes on Slide Making
The Photography of Microscopic Objects
To Make Money with the Lantern
Hints on Cinematograph Work
"Chats with Trade Leaders," No. 1—Mr. Chas. Urban, of the Urban Trading Company
Queries Review of Apparatus New Films Our Suggestion Bureau
Tit Bits Applications for Patents Catalogues and Books Received Light and Shade

No. 2—DECEMBER.

The Only Coloured Film in England
An Inch of Negative, by J. Page Croft
A Note for Slide Makers
Hints on Cinematograph Work
New Films Stereoscopic Notes Tit Bits
On Photographing with a View to the Production of Lantern Slides, by Professor Golding
Cinematography in Colours
Unique Pictures at the St. Louis Exhibition
"Chats with Trade Leaders," No. 2—Mr. James H. White, of the Edison Manufacturing Company
Optical Illusions, No. 1, by Edmund H. Wilkie
Notices Queries and Answers Review of Apparatus Patents

No. 3—JANUARY, 1905.

New Films Correspondence Stereoscopic Notes
Winter Work, by the Rev. T. Perkins
How to Obviate the Acquirement of Cover-Glasses at a Penny each
The Carbon Process for Lantern Slides
Notes on Lantern Work, by F. E. Lane
A New Form of Music Hall Matinee
Queries and Answers
The Science of Animatography, by the Editor, Chapter 1
Extremes of Temperature
Apparatus for Science Teaching, by E. D. B.
"The Pictorial Treatment of Subjects"
"Photography as a Method of Pictorial Expression"
How to Deliver a Lantern Lecture, by J. W. Wright
Tit Bits Review of Apparatus

No. 4—FEBRUARY.

Optical Illusions, No. 2, by Edmund H. Wilkie
Stereoscopic Notes Correspondence New Films
The Science of Animatography, by the Editor, Chapter 2
Non-Inflammable Celluloid
Notes for the Non Photographic Lanternist, by J. A. W.
"Chats with Trade Leaders," No. 3—Mr. A. C. Bromhead, of Gaumont & Co.
The Sun and Magnetic Storms
Queries and Answers Tit Bits Patents
Catalogues and Books Received Review of Apparatus

No. 5—MARCH.

Stereoscopic Notes Pars from all parts
On the Development of Lantern Plates, by Rev. T. Perkins
The Caricaturist and the Cinematograph
Optical Illusions No. 3, by Edmund H. Wilkie
Oil Lantern in Use A Wonderful Bioscope
Our Patent Columns A Review of New Films
The "Impressionist" in Photography
Review of Apparatus, etc.

No. 6—APRIL.

A Hint for Over-Exposed Slides
Screens and their Erection
Lantern Slide Postal Clubs by Rev. T. Perkins
A Kinematograph for the Blind
Stereoscopic Notes New Films Tit Bits
Eyes and How to Use Them by Professor Golding
Phonographs and Kinematographs
Science and Animatography, Chapter 4
Negative Making for Lantern Slides
Optical Illusions, No. IV. Another Optical Illusion
Catalogues and Books received

No. 7—MAY.

Colouring Lantern Slides with Aniline Dyes
Eyes and How to Use Them, by Professor Golding
Optical Illusions, No. V. Queries and Answers
Three Requisites for a Successful Lantern Lecture
A Living Lamp
Freedom, by J. Page Croft
The Science of Animatography, Chapter V.
Lantern Lectures on British Industries
Stereoscopic Notes Patents New Films Tit Bits
Fourth Photographic Exhibition

No. 8—JUNE.

Catalogues and Books Received
Stereoscopic Vision, by C. W. S. Crawley
Stereoscopic Notes Review of Apparatus
Eyes and How to Use Them, Chapter II.
Revival of the Optical Lantern
Optical Illusions, No. VI.
Patents New Films Notices
Reducing and Intensifying Lantern Slides

No. 9—JULY.

The Flickerless Projection of Motion Pictures, by the Editor
Contact and Reduction, by the Rev. T. Perkins
Cloud Effects in Lantern Slides, by Professor Golding
Catalogues and Books Received
New Films Tit Bits Patents
A Method for Putting Printed Matter on Finished Lantern Slides, by A. J. Honeking
Stereoscopic Notes Marvels of Science
Home-Made Lantern Plates

No. 10—AUGUST.

Lantern Slides at the Northern Photo Exhibition, 1905
Optical Illusions, No. VII.
New Films Stereoscopic Notes
Getting Good Lantern Slides from Weak Negatives, by David Gray Archibald (Newark, U.S.A.).
Architecture and Slide Making
The Science of Animatography, Chapter VI.
A Hint for Over-Exposed Slides

NOTE.—☞ Every number of the Optical Lantern and Cinematograph Journal is profusely illustrated. New Subscribers are advised to obtain back numbers, so as to make their set complete for the purposes of binding. Order from the Publishers—

E. T. HERON & CO., Tottenham Street, Tottenham Court Road, London, W.

GREAT SALE
—OF—
Lanterns, Slides, Bioscopes.

HUGHES' GREAT SALE of Lanterns, Slides, and Animated Picture Machines, taken in exchange. New & second-hand at sacrificing prices; must be cleared for new season's stock.

***THOUSANDS** of slides by all the best makers, York, Wilson, Woodbury and others. From 3d. each plain, 8d. each coloured.*

GREAT SACRIFICES.

Sets Rome, English Mansions, Cathedrals, Zoo, Derby, York, Devon, Mont Blanc, English Scenery, etc., etc. Thousands of sets of Tales, Temperance, Moral & Instructive, Humorous, etc., Scripture, Old & New Testament.

APPARATUS.

Malden's Triple, a superb instrument designed and used by B. J. Malden, Esq., complete with 2 sets highest grade lenses; cost over £100, hardly soiled £46 10 0
Bijou Malden Triple complete, jets, patent double plug dissolvers, patent registering system, made for the great "Sequah," cost £70, price, equal new 30 0 0
Wrench Triple, with triple rack fronts, lenses, jets, taps, cost £75, for 32 0 0
Patent Clamping Telescopic Fronted Triple, elegant instrument, top lantern removes, extra foot, three sets lenses, cost £50, for 20 0 0
Over a dozen more equally as cheap.
Biunial, Telescopic brass fronts, 3 sets lenses, Malden dissolving tap, solid mahogany body, jets, strong case for travelling, used by the Polytechnic Lecture Society, cost £16, for 8 0 0
Biunial, mahogany body, panelled doors, brass front, long tube with lenses, 2 jets and tap, registering stops, late property Modern Marvel Company 5 17 0
Folding Biunial, very portable, suit traveller, tap and jets, £16, good as new 6 10 0
Aluminium fronted, Mahogany, feather weight 7 10 0
Biunial by Newton, complete and ready for use in case 4 0 0
Light Portable Biunial, shop soiled 4 0 0

SINGLE LANTERNS, ETC.

Russian Iron, with acetylene jets, cost £3/10 1 16 0
Japanned Lantern, 3-wick lamp ... 0 6 0
The **Turpuscope,** with vertical slide, changing movement, mahogany and solid brass, £9/9, for 5 10 0
Science Teachers lanterns with Pamphengos lamp, use lime or acetylene, £7/10, for 2 17 6
Allendale Single lantern with incand., light, very portable, cost £6/6, for ... 2 10 0
Science vertical and horizontal lantern, all in brass, jet, reflectors complete, cost £20, price 4 7 6
Oxylithe Generator, £5, for 3 0 0
Oxygen Generator, Riley's, £7/7, for ... 4 7 6
Oxygen Generator, Hughes', £6/6, for ... 3 10 0
Gweyer Jet ... ... 42/- and 1 10 0
100 **Safety** Jets... ... each 4/6 & 0 6 0
100 **Chamber** Jets ... each 4/6 & 0 8 6
Arc Lamp, costing £4/10. for ... 1 15 0
Do., Beaumonts, £3/3 new, for ... 1 10 0
Do., W T C, £4/4 new, for... ... 2 10 0
Ives Photography in Colours, photo-chromoscope with mahogany lantern in strong case, equal new, by Newton, £16/16, for 8 0 0
Stereoscopic Effect on Screen, Anderton's patent, biunial, and 450 Analizers in cases, cost £60, for ... 15 0 0

Immense Bargains in high class effects for Triple and Biunial Lanterns, by the most eminent artists, Hill, Child, Doubell Clark & others. Ask for lists.

ANIMATED MACHINES.

Bioscope, by the Warwick Trading Co., consisting of Bioscope with automatic light cut off, extra lens for lantern slides, Russian iron lantern (special size) with brass double stage front and cone, fitted with both 4 and 4½ inch condensers, one large Urban electric arc lamp, brass extension, adjustable resistances, with fuse blocks, levers, switches, flexible covered wire, one improved rapid film winder, two 11 inch brass spun reels, combination travelling case and exhibition stand fitted with handles. In excellent condition. Bargain, price only 23 10 0
Cinematograph "Wray" 7 10 0
Do., Motophotoscope, cost £35, for ... 13 0 0
Do., "Rowe" camera and projector ... 8 10 0
Do., Photoscope "Hughes" 9 10 0
Do., Projector only, "Prestrich," takes 700 feet film, A.I 8 10 0
Do., Imperial Rotograph, new £21 ... 16 10 0
Do., Gaumont's "Chrono" combination... 12 12 0
Do., Reversing Pictoroscope, £60, for ... 25 0 0
Peep Show, outdoor animated, cost £30 ... 14 10 0
Films, 20,000 feet from per foot ... 0 0 1
Bijou Catalogue of Apparatus, etc. ... 0 0 6
Slide List, 60,000 slides 0 0 6
Grand animated bioscope list ... 0 0 6
Illustrated film list 0 0 6
Second apparatus and films 0 0 3

WE LANTERN THE WORLD.

Bargain Lists, post free, 3d.

W. C. HUGHES & CO., Brewster House, 82, Mortimer Road, London, N.

Requisites for Animated . . Photography.

Should you require

CAMERAS or
PROJECTORS,
RHEOSTATS,
LENSES,
LAMPS, &c., &c.

Write to us for our latest Catalogue which will give you all information.

Cinematograph Films.

We have by far the largest number of subjects to select from, comprising views taken in every part of the world.

The Warwick Trading Company, Ltd.,

Pioneers of Animated Photography,

4 & 5, WARWICK COURT,
HOLBORN,
LONDON, W.C.

Telegraphic Address, "COUSINHOOD."
Telephone 1135 HOLBORN.

Printed and Published for the Proprietors, by E. T. Heron & Co., 9 & 11, Tottenham Street, Tottenham Court Road London, W., September, 1905.